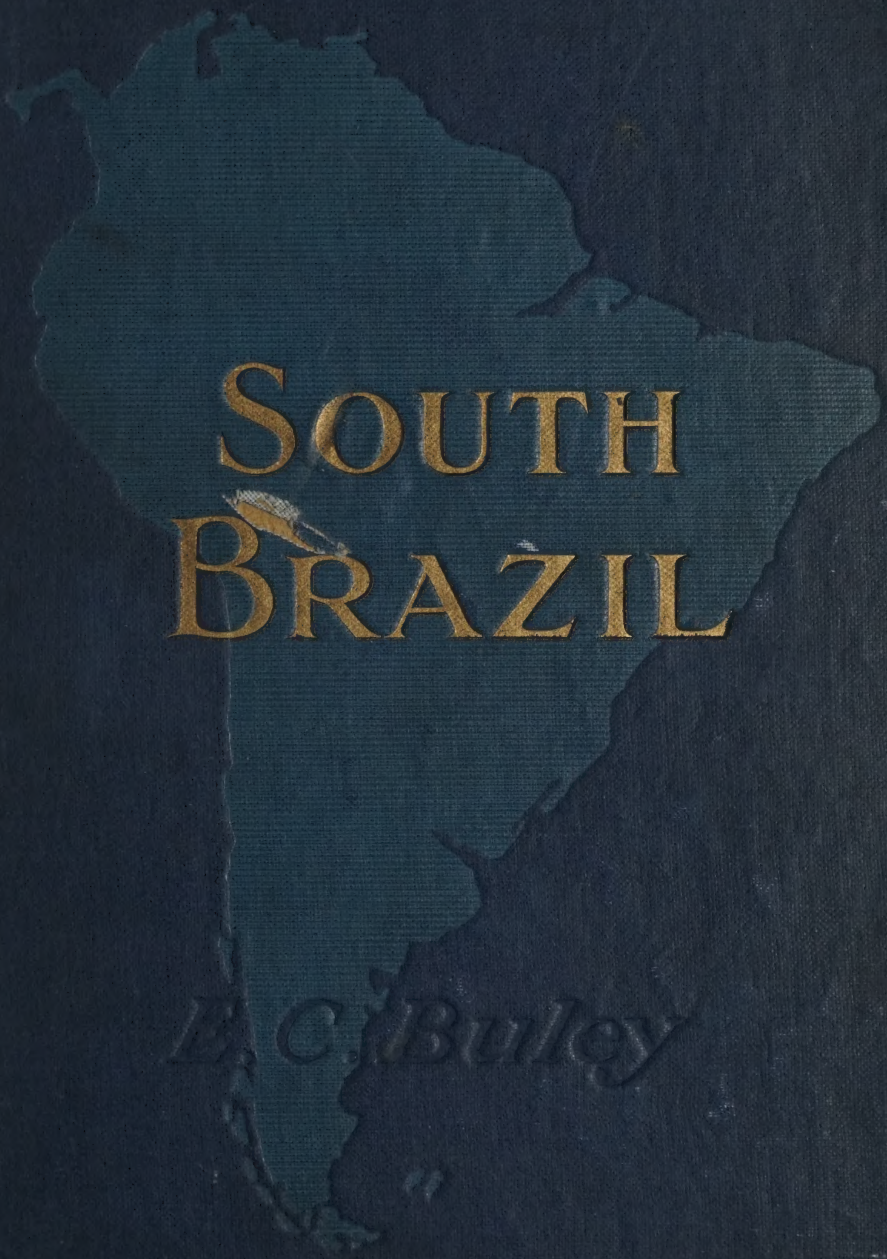
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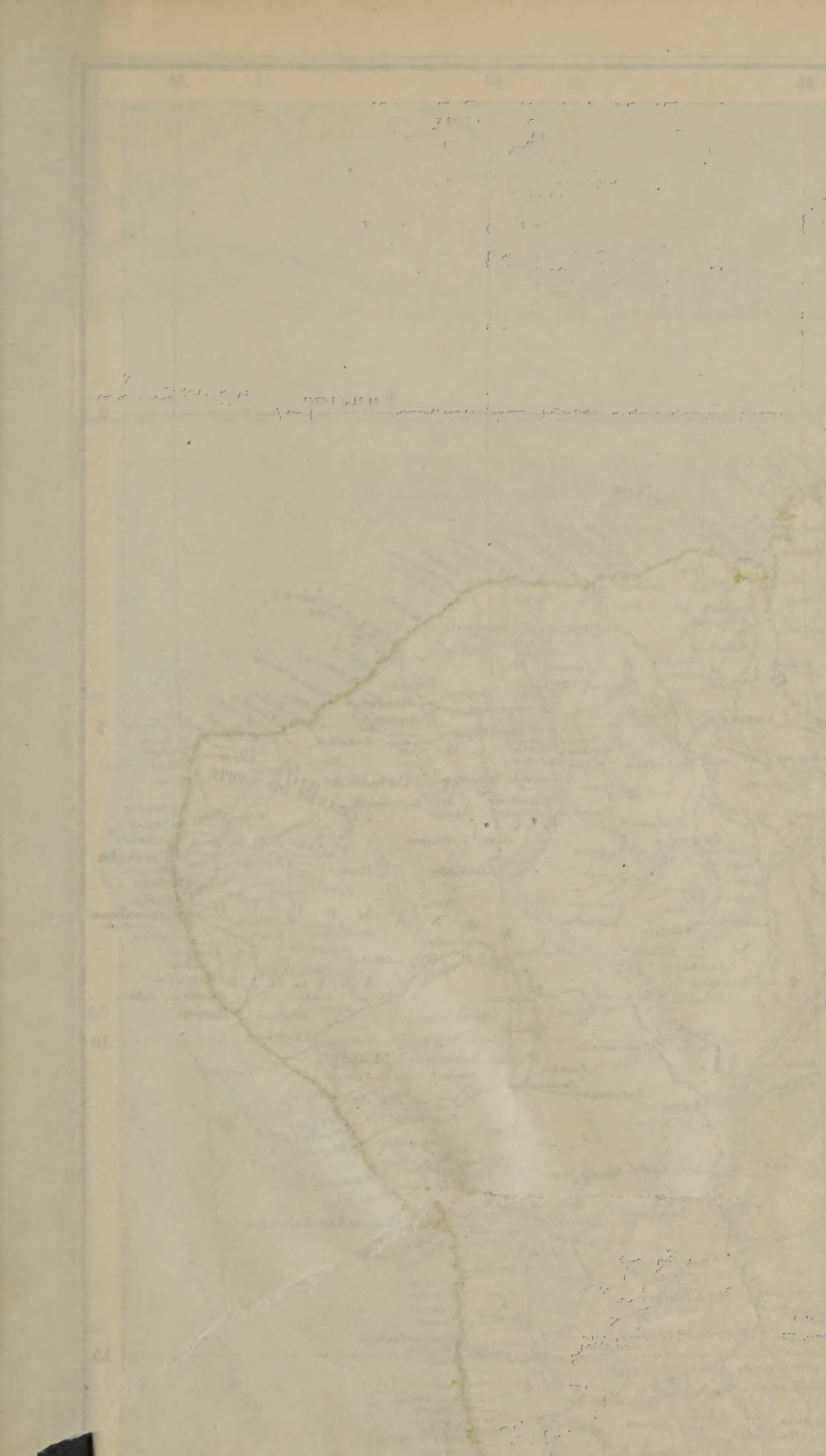
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SOUTH AMERICAN HANDBOOKS

SOUTH BRAZIL

PHYSICAL FEATURES, NATURAL RESOURCES, MEANS OF COMMUNICATION, MANUFACTURES AND INDUSTRIAL DEVELOPMENT

BY

E. C. BULEY

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SOUTH BRAZIL

CHAPTER I

GEOGRAPHICAL AND PHYSICAL FEATURES

BRAZIL, by far the biggest of the countries of South America in point of area, is situated between the degrees of 5° 10′ N. and 33° 45′ S. lat., and stretches from east to west from 8° 25′ E. to 30° 58′ 38″ W. of Rio de Janeiro. Its extreme northerly point is the Serra Parima, and from that point to the bar of Chuy (in the extreme south) is 2,750 miles "as the crow flies." Its greatest width is 2,560 miles: from Cape das Pedras to the source of the river Javary. Its coast line is 4,140 miles long and its area is estimated at 3,329,365 square miles.

It is bounded on the north by the Atlantic Ocean, French, Dutch, and British Guiana, and the Republics of Venezuela and Colombia; on the east by the Atlantic Ocean; on the south by the Republics of Uruguay and Argentina; and on the west by the Republics of Colombia, Peru, Bolivia, Argentina, and Paraguay.

Of this vast area, only 590,487 miles, or little more than one-sixth of the whole, are included within the boundaries of the seven States which comprise Southern Brazil. These are the six coastal States from Rio Grande do Sul northwards to Espirito Santo, and the inland State of Minas Geraes. The most northerly point in this area is in Minas Geraes (lat. 14° S.), and the most southerly point of Rio Grande do Sul is at 33° 45′ S.

1A—(2250)

The extreme easterly point of Espirito Santo is 3° 22′ E. of Rio de Janeiro, and the most westerly point of Rio Grande do Sul is at 14° 18′ W. of Rio de Janeiro. Thus the greatest length of South Brazil from north to south is 1,185 miles, and its greatest breadth from east to west is 660 miles.

Within these limits lies the most densely populated and the most fertile and productive portion of Brazil. It has the best natural harbours and the most extended means of transport and communication ; and, by reason of its more temperate climate, attracts practically all the immigrants from Europe who enter Brazil each year.

South America is geologically the oldest of the Continents, and the geology and physical contour of South Brazil are characteristic of the age of the country. Thus the whole of the land, from north to south, can be divided into three zones. The first of these is the low-lying coastal strip which extends from the northern to the southern boundary of South Brazil. In places, as at Rio de Janeiro, it is only a few miles wide, and the great rampart of the serra seems to rise almost abruptly from the very seashore. Elsewhere the coastal strip is a hundred miles or more in width ; but everywhere, except in the south of Rio Grande do Sul, the transition from flat coast to lofty mountain range is abrupt and well marked, the elevation of 2,000 to 3,000 ft. being reached by an almost precipitous ascent. From the shore side, this rampart looks like a range of hills or mountains—the sharp points of some of the ridges adding to the appearance. As a matter of fact, it is in most places only the steep shoreward edge of a vast plateau, which

slopes gently away inland, but never at an elevation of less than 1,000 ft. above sea-level. Indeed the greater part of this lofty plateau is above 2,000 ft. above sea-level. Nevertheless there is a marked slope away to the banks of the great inland rivers, which form the system of the River Plate; and these sloping descents form the third territorial zone of Southern Brazil.

Each zone presents in its soil and growths a widely different aspect. The coastal strip, low-lying and moist, is composed of poor sandy soil, in many places marshy and insanitary. The trees are small and not deep-rooted, but there is a wealth of parasitic growth which gives an appearance of luxuriance of vegetation that is somewhat misleading. Where the serras begin, the forests of big trees also commence. From head to foot the shoreward slopes of the serras are covered with thick forest, which continues over the summits and clothes the slight declivity on the other side. These forests are almost untouched, and are remarkable alike for the size and the variety of the trees which compose them. As the slope to the west continues, the forests become less dense until, in the third and most westerly zone of South Brazil, one finds a large area covered with dense bush. The forests of the inland plateau have been attacked by the agriculturist, but the thick forest of the serras has never been more than touched; it appears to mark the triumph of Nature over the puny efforts of man. On the plateau, where land that has once been cleared has been allowed to lapse once more into neglect, it soon becomes covered by a growth of quick-maturing trees known as the *capoeira*. This forest is easily distinguishable

by experts from the original *matta*, which contains trees of different and more slowly growing kinds. In the very south, open stretches of grass-grown plains, known as campos, correspond to similar country which is characteristic of the greater part of the Argentine Republic. The forests of the serra end about midway in the State of Rio Grande do Sul.

Only two of the rivers of South Brazil find their way over the edge of the serra to the Atlantic Ocean ; these are the São Francisco and the Parahyba. All the other rivers flowing into the Atlantic are short streams rising on the Eastern edge of the serra. The bulk of the long rivers rise on the long western slopes, and eventually find their way into the system of the river Plate.

When one examines the geography of South Brazil, in particular, rather than general, aspects, it will be found that the coast line, while possessing many small bays, of great value as harbours, is little broken by large gulfs, and does not stretch out into long peninsulas and promontories.

Capes and Points.—From the north of Espirito Santo down to Rio de Janeiro, the coast shows nothing but a series of minor points ; and in that State there is only *Cape São Thomé* and *Cape Frio*, with Points *Negra*, *Guaratiba*, and *Itaipu*, and some smaller ones. São Paulo has Points *Grossa*, *de la Cruz*, and *Alamada ;* and Paraná has Points *des Pecas* and *des Conchas*.

In Santa Catharina are Capes *Martha Grande* and *Santa Martha Pequena ;* and Points *Papa*, *del Armação*, and *des Afogados*. In the State of Rio Grande do Sul there are also a number of minor points.

BAYS.—South Brazil begins just where the great *recife* or coral reef, which lines the northern coast, ends, and the coastal ranges approach very close to the shore. Here some fine bays are encountered, such as *Caravellas, São Matheus,* and *Victoria;* and the more notable example, still, of *Rio de Janeiro.* Other bays in the State of Rio de Janeiro are *Imbitiba, Macahe Itabapoana,* and *Benevente.* Further south in the State of São Paulo is the *Bay of Santos,* and in the same State the bays of *Iguape* and *Ubatuba*; Paraná has the bay of *Paranagua* and the harbour of *São Francisco;* and in Santa Catharina are the bays of *Florianopolis, Tubarão, Laguna,* and *Itajahy.* The coast of Rio Grande do Sul is lined with great lagoons, to which there are several entrances from the sea. The most notable of these is the entrance to the great Lagoa dos Patos, near the city of Rio Grande.

ISLANDS.—Most of the islands of Brazil are very near the coast, and of these, Espirito Santo has *Franceza Rosa, des Frades,* and *Guoraparim.*

Grande Comprida and *da Giboia* are the islands of R o de Janeiro, and there are also a number of small islets outside and within the Bay of Rio.

São Paulo has *São Vincente, Santo Amaro, São Sebastião, Cananea, des Porcos,* and *du Castello;* and Santa Catharina has *São Francisco, des Remedios, Santa Catharina,* and *d'Arvoredo.* Finally, in Rio Grande do Sul are *Barba Negra de Cangassu* and *Marinheiros.*

MOUNTAINS.—The high mountains of South America being placed on the west, Brazil has wide plateaus and long rivers. Indeed, the greater part of the country may be described as a vast plateau, from 1,000 to 3,000 ft.

in altitude, and broken by valleys through which run the country's great rivers. There are two well-marked mountain systems : the Eastern and the Central.

The Eastern system runs down the east coast from Cape São Roque to the centre of the State of Rio Grande do Sul. It comes very close to the coast, in the State of Rio de Janeiro, and is there about 60 miles wide ; in Bahia it is three times as wide ; and in Minas Geraes four times as wide. In the States of Paraná, São Paulo, Rio de Janeiro, Espirito Santo, and the south of Minas Geraes, the system is divided into two well-marked ranges : the *Serra do Mar* and the *Serra da Mantiqueira*. In the Serra da Mantiqueira is the highest known point of Brazil : *Mount Itatiaya* (9,730 ft.). The highest point in the Serra do Mar is in the State of Rio de Janeiro : the *Orgaes* (7,254 ft.).

In the State of Bahia, east of the river São Francisco, the range of the *Espinhaco* is marked by some high points, among them : *Itoaclomy* (5,694 ft.), *Caraca* (6,357 ft.), *Piedade* (5,800 ft.), and *Itambe* (5,928 ft.).

Rivers.—The more important rivers of South Brazil are, as already stated, those which form the system of the river *Plate*, flowing inland from the watershed of the serra. The chief of these are the *Uruguay* and the *Paraná*. The former rises in the State of Santa Catharina, and for a long distance forms the southern boundary of the State. *The Paraná* is formed by the junction of the *Parnahyba* and the *Rio Grande*, and also receives the *Tiete*, the *Pardo*, the *Parapanema*, the *Ivahy*, and the *Iguassú*.

Of the rivers which fall into the Atlantic, the greatest

is the *São Francisco*, which rises in the State of Minas Geraes. Others are the *Doce*, the *Parahyba do Sul*, the *Itajah*, the *Titjucas*, the *Tubarão*, the *Araraungua*, the *Mampituba ;* and flowing into the *Lagoa dos Patos*, the *Jucuhy*, the *Cahy*, the *Camaquam*, the *Jaguarão*, and the *Piratini*.

The following are the lengths in miles of the principal rivers of South Brazil—

River.	Flows into.	Length in Miles.
Paraná ..	River Plate ..	2,790
São Francisco ..	Atlantic Ocean ..	1,810
Uruguay ..	River Plate ..	1,030
Grande ..	Paraná ..	850
Iguassú ..	Paraná ..	825
Tieté ..	Paraná ..	700
Doce ..	Atlantic Ocean ..	610
Paranahyba ..	Paraná ..	600

Lakes.—The lakes of Brazil are neither numerous nor large when compared with the other physical features of the country. Many of the largest of them are lagoons on the sea coast, connected with the Ocean by one or more channels. The principal lakes will be found in the list following—

Lake.	State.
Dos Patos	Rio Grande do Sul
Mirim	,,
Mangueira	,,
Araruama	Rio de Janeiro
Feia	,,
Itapeva	Rio Grande do Sul
Jacarepagua	Rio de Janeiro
Dos Quadros	Rio Grande do Sul
Saquarema	Rio de Janeiro
Patos	Santa Catharina
Cima	Rio de Janeiro
Itapoca	Santa Catharina

CHAPTER II

CLIMATE AND HEALTH

A COUNTRY as large as Brazil, which is more than three-fourths the size of all Europe, has naturally a wide range of climate. Indeed, within its boundaries may be experienced all climates except the very extremes, for nowhere is it excessively hot or unduly cold. It is best for purposes of description to divide the country into three climatic zones : the tropical, the sub-tropical, and the temperate.

The TROPICAL ZONE itself subdivides into three sections, viz.—

(*a*) The higher Amazon ;

(*b*) The interior of the States of Maranhão, Pará, Matto Grosso, Piauhy, and part of the interior of Bahia and Minas Geraes ;

(*c*) The district of the seashore of the States of Pará, Maranhão, Piauhy, Ceará, Rio Grande do Norte, and Parahyba.

In the higher Amazon the year is divided into two parts : the period of the heavy rains and the period of the light rains. The heavy rains last from February to June, and the light rains from October to January. The temperature varies but little throughout the year, and when there is any breeze it usually blows from the south-west.

In the interior of the Northern States, the summer is the rainy season, and in some places these rains extend

until the middle of the year. Sometimes they do not come at all, and this is especially the case in Ceará. There is little difference between winter and summer temperatures.

The coastal district has very heavy rains in the summer and autumn, the rainiest month being April. The dry season comes in the last four months of the year, but all the Eastern part of this zone is liable to drought.

The SUB-TROPICAL ZONE may be divided into two sections, each of which has its rainy season, but at different times in the year. The first section comprises the States of Pernambuco, Alagôas, Sergipe, and the coastal district of Bahia. In this part of Brazil heavy rains fall between June and August.

The second section includes the South of Bahia, Espirito Santo, Rio de Janeiro, and the coastal part of São Paulo. Here rain is plentiful in the summer and autumn, from December to April. There is a wider difference between summer and winter temperatures in the sub-tropical zone than in the tropical zone. The winds that prevail are either from the south south-east or the north north-west.

The TEMPERATE ZONE includes the States of Paraná, Santa Catharina, Rio Grande do Sul, the uplands of Minas Geraes, and the south of São Paulo. Here the rain falls in the autumn and the winter ; the temperature is milder, but shows greater extremes, though they are only normal. Winter extends from June to August, and in most places is very mild. In the uplands of the south, snow is sometimes seen, and frost at night is no rarity. But the day gives bright skies and bracing

sunny weather, with an occasional rainy day, when the rain is heavy and sudden.

Passing from general observations, it will be well to give some particulars.

In the Amazonian valley it is very hot in the middle of the day, but the mornings are fresh and the evenings often made pleasant by a cool breeze. There is a noticeable diminution of temperature at night time, which makes sleep possible at all times of the year. The two dry seasons are January and February, and July to October; as already stated, the intervening months are marked by two separate rainy seasons.

The interior of Maranhão and the north of Matto Grosso has much the same climate, but there is rather more variation of temperature.

Along the northern coast the equability of the climate is quite remarkable; as a traveller who recently visited those shores has written: "There is much weather, but no climate to speak of." There is not 20° centigrade between the extremes of heat and cold recorded in a year along the northern coast of Brazil.

The coastal rainfall decreases as one goes East, being very heavy at Belém and reaching its minimum in the interior of Ceará, though the coastal districts of Rio Grande do Norte are not always blessed with the rains that are hoped for. Going south along the coast, the rain increases again until at Pernambuco the annual rainfall may once more be described as considerable.

In the north of Bahia and the State of Sergipe, December, January, and February are the hottest months, and June, July, and August the coolest. These are the

months of the rains, though in the hot months there are occasional very heavy rains. The winds blow from south-east and east from April to September, and from north and east north-east between September and March. The atmosphere is humid and the heat is oppressive, though the degree of temperature is not high.

In the south of Bahia, Espirito Santo, Rio de Janeiro, and the north-west of Minas Geraes, the rains last from December to April. The climate is milder than in the section immediately to the north, though the atmosphere is equally humid. The prevailing winds are from the south south-east and the north north-west.

The south of Matto Grosso and the valley of the Paraguay, in its middle and upper course, has a tropical climate. The heat is great and the atmosphere charged with moisture ; heavy rains and violent winds characterise the wet season.

In the uplands of Minas Geraes and Goyaz, the climate is much more pleasant. The atmosphere is less humid, and owing to the elevation the heat is not so great. A similar climate is found in the north of São Paulo ; and the whole region, thus loosely defined, is, by reason of its fine climate and fertile soil, the most productive part of all Brazil.

The coastal strip of the temperate zone has a uniform climate, and regular and copious rains. It is fertile and covered with luxuriant vegetation ; the atmosphere is humid, but tempered by regular cool sea breezes.

The climate of the uplands of the temperate zone is that of Southern Europe. Rain is frequent, but the clouds are quickly dispersed, and there is a large number

of bright, sunny days. The wind from the south-west blows at certain seasons of the year, and is known as the "pampeiro," because it comes from the pampas of Argentina. It is chilly, but invigorating. The average temperature at Curityba is 16·4 Centig. and at Pelotas 18 Centig.

It will be seen from this brief *résumé* that in Brazil all degrees of climate are to be found, except the very extremes of cold and heat. It has been proved by experience that European people can acclimatise themselves rapidly and without inconvenience in almost every part of the country.

The time is now past when the opinion held that Brazil is an extremely unhealthy country. The justification for that view has ceased to exist, owing to the discoveries concerning the causes of malarial and yellow fever. It is not very many years since the two great ports of the country—Rio de Janeiro and Santos—were dubbed fever holes, and with reason. The annual visitation of the dread yellow fever was accepted at both places as an inevitable result of the climate and surroundings of these fine cities. At Rio, the mortality from this cause was very heavy in the early nineties. In 1891 there were 4,456 deaths ; 4,312 in 1892 ; and 4,852 in 1894. During the next ten years the havoc caused by yellow fever, if not so appalling, was at least very high. The lowest number of deaths was in 1901, and then 2,299 were recorded. By the end of 1903 the roll of mortality had reached 58,635 since 1850—a terrible record.

By that time it had been discovered and proved that



Rio de Janeiro. The Palm Avenue

the disease was transmitted by mosquitoes, and the Government determined to stamp out the insects which transmitted the disease. A brigade of men—1,500 in number—were appointed for the purpose, under the title of "mosquito-killers," and a rigorous cleansing and disinfection of the city began. Petroleum was used freely to destroy the eggs; a general scheme for the better sanitation of the city was put in force; and, in spite of the opposition of the ignorant and the prejudiced, the work of sanitation was thoroughly performed. The deaths from yellow fever sank from 584 in 1903 to 48 in 1904; in 1908 there were only 4 deaths; and in the next year there was no death from this cause. The British Consul at Rio de Janeiro, in his Consular Report for 1911–12, mentions that during the year there were three cases of yellow fever reported in the city, though none of them was fatal; and he adds that all were imported cases from the northern coast.

A similar work of sanitation and mosquito destruction freed Santos from the mosquito plague and, consequently, from the epidemics of yellow fever with which the name of the port was once associated; and similar steps have been taken in all the Brazilian cities where once this plague was rife. The Brazilians are now able to publish the death rates of their large cities and to compare them with advantage with those of the capitals of Europe. (See table on next page.)

The Brazilian cities instanced are, of course, the most up to date in their sanitary arrangements in the Republic. A different tale would have to be told until quite recently of such cities as Recife, Belém, and Manáos; but these

cities are also now providing themselves with the best and most efficient means of sanitation.

	Death-rate per 1,000.
St. Petersburg	30·5
Madrid	28·0
Rome	20·8
São Paulo	20·8
Rio de Janeiro	20·7
Bahia	18·1
Paris	17·6
London	16·5
Curitybá	14·9

CHAPTER III

FLORA AND FAUNA

I. The Flora.—Brazil includes an enormous tropical region, the flora of which is amazing in its variety and its rapid and prolific growth. The soil is so rich and the moisture so abundant, that ground which has been cleared, will, if left to itself, be covered in a very few years' time with a growth indistinguishable by the inexperienced eye from that of the virgin forest; and this is true, not only of the Amazon basin—familiar to the English reader from the accounts of Bates, Wallace, and other travellers and naturalists—but also of the south and west of Minas Geraes, the valleys of the Doce and the Parahyba, and of the Serra do Mar along the Atlantic coast of Southern Brazil, right down into Rio Grande do Sul.

The lower land in the Amazon basin is subject to periodical inundation. Tough grasses grow on the ground, with willows and plantains; very characteristic growths are the palms and the *Arundo saccharoides*, with bare trunks and dark green, spreading crowns. The gigantic *Victoria regia* is found in the water; and the forest trees include cinchona, rubber, bombax, mimosa, and myrtle. The virgin forest above the line of inundation has an extensive growth of ferns and a great variety of huge timber trees (reaching 180 ft. and upwards in height). They are covered with parasitic plants and vines, or lianas, with brightly-coloured flowers. Mangroves and *conocarpos* grow along the Atlantic coast as

far south as the State of Rio de Janeiro ; and cypresses and palms are found in the lower parts of this grass-covered plain or *campos* inland. The cultivated crops (coffee, cotton, tobacco, cacao, maté, etc.) are described under *Agriculture ;* this section gives a rapid analysis of the indigenous flora, more especially from the standpoint of its economic value.

Rubber Trees.—The best forest rubber is procured from the Euphorbiaceous trees of the *Hevea* species, especially *Hevea brasiliensis, H. discolor,* and *H. guayanensis ;* almost as good *latex* is obtained from the *Micrandra syphonoides, M. elata,* and *M. bracteosa,* which also belong to the Euphorbiaceae, and from the *Sapium* species. The inferior " caucho " rubber comes from the *Castilloa elastica,* (fam. *Artocarpaceae*). All these are tall trees, the Heveas growing up to nearly 100 ft. and the Castilloas up to 65 ft. Mangabeira rubber is obtained from the *Hancornia speciosa,* a shrub, with several species, which only grows about 10 ft. high. Maniçoba rubber comes from the *Manihot Glazovii,* found mainly in Ceará, Piauhy, and Bahia. Inferior qualities of latex are produced by many other trees and shrubs, which may be ultimately turned to a commercial use, *e.g.,* the *Mimusops elata* (producing balata gum), *Lucuma procera,* and *L. laurifolia, Platonia insignis, Ficus elasticus, Plumeria phlagedenica, Soarezia nitida, Couma utilis* (sorveira), *Urostigma doliarum,* and the Landolphias.

Tannin-producing Trees.—These are exceedingly numerous, and are not only used in Brazil, but exported to Europe. The most important are the Barbatimão (*Stryphnodendron b.*) and the red mangrove (*Rhizophora*

mangle); others include the red angico (*Piptadenia rigida*), *Apuleia praecox*, *Acacia jurema*, *Ludwigia caparrosa*.

Fibre-producing Plants of many different families are also very numerous. The most familiar, known as *Aramina*, belong to the family *Malvaceae*, and are cultivated in S. Paulo; and the Brazilian hemp or Perrini flax (*Canhamo br.*) is cultivated in Rio de Janeiro. Excellent fibres are obtained from many palm-trees, from the Piassabas, the Piteira, the Paineira (a silky fibre), the Barba de Velho, and the Gravatá (*Bromelia lagenaria*).

Vegetable Oils and Waxes are procured from the seeds of the castor-oil plant (*Ricinus communis*), the Anda-assú, the Queimadeira, the Copaifera; from the Brazil nut trees—the *Bertholletia excelsa* (Pará chestnut)—and the Sapucaia; from the Andiroba or Jandiroba; from the *Myristica* or tallow-trees; from the Carnaubeira; from the coco-nut tree, which yields copra; from the Avoira and other palms; and from the pea-nut.

Medicinal Plants include a large variety of cinchonas (known in Brazil as Quinas), quassia, angostura, sarsaparilla, ipecacuanha, jalap, guaraná, maté, jaborandi (from which pilocarpine is obtained), colchicum, sassafras, cashew, dragon's blood, and numerous others. Icu, urare, canabi, and many others contain poisons.

Ornamental Plants include upwards of 1,000 orchids (Cattleyas, Loelias, and many others), the most beautiful coming from Espirito Santo and S. Catherina; bamboos, palms, tree-ferns; camaras, gloxinias, begonias, etc.; the passion-flower; and the famous *Victoria regia*, mentioned above.

Dyewoods—red, blue, yellow, violet, black—are numerous, including Brazil wood (*Caesalpina echinata*), dragon's blood, anil, indigo (not indigenous), annatto, eupatoria, and genipapo.

Gums are obtained from various Jatobás, angicos, cambuys; Resins from the Paraná pine, icicariba (elemi), copayer, and carana; and Essences from the Cumarú (Tonka bean), vanilla, cravinho.

Timber Trees.—The forests of Brazil are notable for the variety of species they contain—a fact which is adverse to their exploitation on the lines of the North American lumber trade. Many trees are of extraordinary hardness, "more like iron than wood"; many also are very beautiful in scent, colour, and texture, and admit of high polish. The development of the timber trade is slow, and the wood so far has been used in bulk mainly as fuel (for the railways and sugar-mills), and for making railway sleepers. Many useful and characteristic species have been mentioned above; among timber trees proper are the following: Bacury (*Platonia insignis*), latex-producing, used for building; Sucupira-assú, a building wood; Ipe or bow-wood (*Tecoma*), used for piles, harbour-work, etc.; Massaranduba (*Lucuma procera*), a gigantic tree, with hard water-resisting timber, producing a rubber *latex;* Pao ferro or ironwood, extremely hard, used for piles, etc.; Muirapinima (*Brosimum*), chocolate and black, used in marquetry; Sapucaia (Lecythis), hard wood, for building, piles, etc.; Louro, for joinery and coopering; Itaúba preta, black and durable, used for building and piles; Acapu, tall tree with hard wood; Guarapuvira, for joinery and carriage-building; Pao

roxo, for carriage-building; Jacaranda or Rose-wood (three main species: *J. preta* = black rose-wood, *J. cabiuna* = real rose-wood), used for furniture and building; Pao precioso, yellow, used for cabinet-making; satin-wood (*Aspidosperma eburneum*), sulphur coloured, used for cabinet work; Araribá (*A. amarello* = yellow box-wood, *A. rosa* = red boxwood); Peroba (*Aspidosperma*), close-grained, used for furniture and building (*P. revessa* = figured peroba; *P. rosa* = red wood); Imbuia, brown, used in cabinet-making; Araucaria or Paraná pine, red or white, grows to 150 ft.; cedar of Brazil, pink colour, and easily worked; Vinhatico (Brazil mahogany), with very thick trunk, used in cabinet-making; Angelim (several species), resists attacks by ants and other insects; Gonçalo alves (Alves-wood); Pequiá Marfim (gold-wood). This list might be very largely extended; but the above are typical of the qualities and uses of Brazilian woods, and a full catalogue of native or botanical names would be out of place here.

VEGETABLES.—These are dealt with under *Agriculture* (Chapter XI).

FRUITS.—All kinds of fruit flourish, and many species have been imported and acclimatised (*e.g.*, vines, oranges, lemons, plums, etc.). Characteristic indigenous fruits are the abacati, pineapple (abacaxi), coco-nut, cashew (producing a fruit with a nut at the end), bread-fruit, genipapo, abieiro, araça, several cacti, bananas, Pará apricot, custard apple (Fruta de Conde, Pinha, or Ata), bacuri, jambeiro, imbu, pitanga, guava (used largely for preserves and jellies), jamboticaba, mamona, cambuca, mango, sapoty, and guaviroba (see also AGRICULTURE).

CEREALS.—These are dealt with under *Agriculture* (see Chapter XI). Maize, mandioca (sweet and bitter), arrowroot, and mangarito are indigenous; and so perhaps are the potato, cara, sweet potato, and yam, though many species have been imported.

GRASSES are abundant in quantity and very numerous in species. The fodder grasses, known as *Capim*, most used are the *C. de raiz, C. branco, C. mimosa, C. marmalada* (grows 16 ft. high), *C. boi chamba, C. arroz, C. da praia, C. garova, C. lanceta,* and *C. gordura;* these belong to the order of Gramineae. Others again are leguminous. Wild grasses include the papuan, jaragua, jequirana, joelfindo, and herva d'anta (so called from the love of the tapir for its leaves).

II. THE FAUNA.—The Neo-tropical or Neo-gaeic region of the world, of which Brazil forms part, possesses many peculiar species of birds, fish, and animals, most of which are represented in the Brazilian fauna; but it has no indigenous representatives of the horse, sheep, goat, or antelope families.

Of Brazilian mammals, the largest and strongest is the *tapir* or *anta* (*Tapirus Americanus* or *terrestris*), which has a heavy, short-haired body, with a mobile proboscis and rudimentary tail; it is of nocturnal habit. The flesh is wholesome, and the hide good for harness and saddle-making. The *jaguar* or ounce (*Felis onça*), and the *puma* or cuguar (*Felis concolor*), are of the tiger family. The former is the larger, and is of buff colour marked by black spots; there are four species. The latter is tawny, with dark streaks along the back; two species exist. Both prey on domestic animals, as well

as on deer, rodents, monkeys, etc. To the canine family belong the *lobo* or wolf (*Canis jubatus*), the Brazilian dog (*C. brasiliensis*), the fox-like *C. vetulus*, and the South American raccoon (*Procyon carnivorus*). There are twelve species of marsupial opossums (*Didelphys* and *Cheironectes*). Rodents are numerous, including six species of porcupines, two of the semi-amphibious cavies (*C. paca*), and numerous rats. The Edentates includes some of the most characteristic of the animals of Brazil, viz., two kinds of sloth (*Bradypus tridactylus* and *B. torquatus*), six kinds of armadillo or tatú, and a very large and a small ant-eater (*Myrmecophaga jubata* and *M. tetradactyla*). There are four species of deer, two peccaries or wild hogs—the " white-lipped " and the " collared "—together with the guinea-pig (*Coelogenys*), the capybary, the agouti, the otter (*Hydrochaerus*), the hare, and the rabbit. The monkeys—mainly found in the Amazon region—number over fifty species, the most sagacious being the coati (two species : one gregarious, the other living in pairs) ; the howling monkeys, the capuchins or cebus, and the marmosets (fourteen species) are well known.

The birds of Brazil number over 1,700 species, some famous for their brilliant plumage, others for their singing, others again for their powers of screaming and croaking. They range from the king-vulture to the tiny humming-bird, and include the rhea or American ostrich, the long-billed toucan, and numerous parrots.

Of bats and vampires, there are twenty-four or more species, and in some districts they are a dangerous pest. Reptiles are numerous, including the anaconda or

water-boa and the boa-constrictor ; of some fifty species of snakes, about a dozen are poisonous, the most dreaded being the jararaca and the rattlesnake. Alligators swarm in the larger rivers, especially of Pará, and turtles and turtle-eggs form an important article of diet on the Amazon. The sea-cow (lamantin or manatee) and the boto or fresh-water dolphin are also found and hunted in the Amazon. Frogs and toads, crabs and lobsters, and mollusca are also numerous.

It only remains to notice the teeming insect and fish life. There are butterflies, large and small (some of great beauty) ; spiders, beetles, ants, mosquitoes, ticks, etc. ; of one family of insects, the Longicornes, nearly 500 species are known. Both rivers and coast abound in fish, and it is said that the Amazon basin contains over 1,800 species. Notable among them are the *pirarucú*, the largest of fresh-water fish ; the *piranha* called in the Orinoco region, the *caribe*), a fierce carnivorous fish, attacking animals and men ; and the *gymnoto* or electric eel. Many of them, especially on the coast, are valuable as food, and are caught in great quantities.

Apart from the food value of many of the fauna, other economic uses are not inconsiderable, *e.g.*, the skins of the ox, sheep, and goat provide leather ; the coypu provides material for felt hats, and the tapir for saddles, harness, etc. ; the tails of several kinds of monkeys are used for making muffs ; and the skins of the jaguar, deer, otter, cayman, and capybary are also valuable.

Oil is prepared from whales (of which nine species are found in Brazilian waters), from turtle-eggs, and from

several fish (*e.g.*, the lamantins, bogres, and squales); and isinglass from several species. The feathers of the egret and of the emu or rhea are valued in the European markets. Finally, specimens, both living and stuffed, are exported in increasing numbers.

CHAPTER IV

HISTORY AND SETTLEMENT

THE Brazil of to-day is the greatest monument remaining of the Portuguese genius for exploration and colonisation. It is true that Portuguese supremacy in Brazil was maintained during the seventeenth and eighteenth centuries because of the European struggles in which France, Holland, and England were involved; but, none the less, the adventurers of Portuguese extraction, who struggled to maintain the prestige of that race in Brazil, did so with skill as well as resolution.

The first European discovery of Brazilian territory was made by a Spaniard named Pinzon, who, in 1500, sighted the coast near the mouth of the Amazon and explored the estuary of that river. A few months later, Pedro Cabral, a Portuguese navigator, bound for India, making a wide detour to avoid the calms of the doldrums, got into the Brazilian current and landed at Porto Seguro. He at once took possession of the country, which he supposed to be part of Asia, in the name of the King of Portugal. He sent a vessel back to Portugal with the news, marooned two unsatisfactory crews on the spot, and went on his way to India.

A fleet of discovery was sent out from Portugal to the new possession and, encountering Cabral on his way back joined forces with him; the combined fleets explored a great part of the Brazilian coast. Another fleet followed, and the Brazilian coast became a regular calling place for Portuguese ships on their way to India.

But the Portuguese were not to have it all their own way, for the French were deeply interested in the north coast; and Dom João III found it necessary to send out a fleet against them in 1526. The fleet was successful, and a settlement was established at Pernambuco. To retain possession of the new land, it was divided into areas called "capitaneas," each of which was handed over to some suitable Portuguese noble, who could undertake to defend and settle the portion allotted to him. This was the beginning of the Portuguese occupation of Brazil. Each "capitanea" was to be hereditary; it had a strip of coast line 150 miles in extent, and attached to it was the country inland as far as the capitan could control. Fifteen of these "capitaneas" were allotted, and settlement was begun by the Portuguese at 15 points along the Brazilian coast.

Foundation of Bahia.—The defining and limiting of the "capitaneas" was the task of Martin Affonso de Sousa, who set out with a fleet from Portugal in 1530 to perform the work. He entered the Bay of Todos os Santos and found living there, in all friendliness with the local Indians, a member of one of the crews marooned by Cabral when first he took possession of Brazil. This man was Correia, called by the Indians, Camamurú; and he used all his influence with the Indians for the benefit of his fellow-countrymen. Thus Affonso de Sousa was enabled to found Bahia, the original Portuguese capital of Brazil.

The "capitanea" of Bahia was granted to a captain named Coutinho, who was also backed by Camamurú, and was enabled to establish colonies inland. There,

however, his followers enslaved the Indians, and provoked a rising which was the beginning of bad feeling between whites and aborigines. In the end, Coutinho was shipwrecked and killed and eaten by the aborigines whom his followers had provoked.

News of this disaster reaching Portugal, Thomé de Sousa was sent out, in 1549, with a strong force to establish a royal colony there, which should serve as a nucleus of strength to the scattered "capitaneas." He had with him a strong force of soldiers, and entrenched himself in military fashion behind the palisades of Bahia. He also introduced cattle from the Azores.

The members of his band, over 4,000 in number, took to themselves Indian wives, and the foundation of the Brazilian race was thus begun.

Beginnings of São Paulo.—Just as Affonso found a Portuguese living in amity with the Indians at Bahia, so, on proceeding further south, in his work of colonisation, he found another under similar conditions at Cananea, in what is now the State of São Paulo. This was João Ramalho, who had married the daughter of the chief of the most powerful tribe of local Indians. As in the case of Camamurú, his great influence with the Indians obtained for the white men a friendly greeting and a foothold. Here, too, the Portuguese followed the example of this pioneer and took Indian wives, and the business of enslaving the Indians was repeated. The half-breed race that resulted combined the ferocity of the Indians with the intelligence of the whites; as the Mamelucos of São Paulo, these half-breeds played an important part in opening up the interior of Brazil.

At that time the official name of the new land was Vera Cruz, the land of the True Cross ; but, as the first cargoes to Portugal contained a large quantity of the red dyewood known in Europe as Brazil wood, the new possession was soon christened after that commodity.

With De Souza came the Jesuit missioners ; and their treatment of the Indians showed a marked difference. As a consequence of their mildness, they attached to their settlements the best of the Indian labour, thus causing friction between themselves and the earlier arrivals. Indeed, the brutality of the first-comers caused Indian reprisals on such a scale, that help had to be sent to São Paulo from Bahia ; and, under the leadership of Albuquerque, the Portuguese drove the Indian bands as far south as the Lagoa dos Patos, where the first settlement in Santa Catharina was made at Laguna.

But when the country around São Paulo was cleared of Indians, there was none to labour in the fields, and the Mamelucos then started their slaving raids, from which they received the title of *bandeirantes*. The Jesuit missions were their first objective, and the effect of their raids was to drive away all the Indians from these missions. The Jesuits retorted by obtaining from Portugal, in 1570, a decree abolishing Indian slavery.

The Mining Expeditions.—This decree was to have far-reaching results in the future, for it was the cause of the introduction of negro slaves into Brazil. In the meantime, the Paulistas showed their resentment of it by driving the Jesuits out of that part of the country. At the same time, they began to lend ear to the Indian tales of gold and jewels inland, and to send out expeditions,

from 1600 onwards, in search of the rivers of gold of which so much was told them. These expeditions were conducted on the lines rendered necessary by the character of the country and the known presence of bands of hostile Indians in every part of the forests. Outposts were, therefore, thrown forward to establish clearings and plantations, where the explorers might obtain the food they could not carry with them. Gradually, the Paulistas made their way by slow stages into the heart of the mountains of Minas Geraes.

The gold discovered in the alluvial river beds soon found its way to Portugal, and attracted a host of fresh adventurers, who poured into the interior in spite of the resistance of the Paulistas, who claimed the treasures of Minas by right of discovery. When the easily-got alluvial gold was exhausted, many of these adventurers settled on the fertile hills and founded the great agricultural and pastoral beginnings of the State of Minas Geraes.

Rio de Janeiro Founded.—The settlement at Rio de Janeiro was effected in quite another fashion. The harbour itself was discovered two years after the momentous find of Cabral, the discoverer, one Gonzalo Coelho, mistaking the bay for the estuary of a great river. Beyond giving it the puzzling name it has borne ever since, Coelho did nothing to mark his discovery, and when Affonso de Sousa made his voyage of organisation, he had to drive out the French before he could establish a "capitanea" there. For a long time the history of the new colony was one of continual struggles with the French, both sides recognising the naval value of the place; but in the end the Portuguese triumphed.



Rio de Janeiro. View from the Corcovado

Indeed, it was the obvious naval value and accessibility of Rio de Janeiro that ultimately caused the capital to be transferred there from Bahia in 1762. The city maintained its connection with the rest of Brazil by sea, and its influence was little felt inland where the forests were occupied by tribes of unfriendly Indians.

The need for a strong naval station on the Brazilian coast was primarily due to the occupation of the Portuguese throne by Philip II of Spain in 1580. Up till that time the chief troubles of the colonists had been to repel the attacks of Spaniards. These now ceased; but the hostility of Dutch, French, and British was substituted. It would be impossible to recount here all the troubles the Spanish *régime* in Portugal brought upon the outposts of Brazil. They only ended in 1640, when Portugal ousted the Spaniards and the enmity of the aggressors was turned away from Brazil.

By Portugal, Brazil was regarded as a colony, the trading monopoly of which was to be retained at any cost. Sugar and forest products were the first trading advantages derived from the possession of Brazil, and afterwards gold and precious stones. But Portugal was a nation on the down grade; and the requirements from this great colony were not many, nor were they elaborate. For that reason the industry of Brazil expanded but slowly, and this sluggishness was accentuated by the prohibition enforced against other nations trading with Brazil.

The Beginning of Empire.—An end to this lethargy came early in the nineteenth century, when Napoleon invaded Portugal and drove the Bragança from the

country. The Prince Regent was Dom João, who reigned in the name of his mother, Queen Maria; and he and his Court took refuge in Brazil. He landed at Bahia, and there issued a proclamation which procured for him a fervent welcome at Rio de Janeiro. It threw the trade of the Brazilian coast open to all nations, thus abolishing the deadening trade monopoly. He further abolished the prohibition of industries, established the printing press, and gave the country its first measure of freedom and civilisation.

In 1815 Brazil was proclaimed a kingdom; and on the death of Queen Maria, in 1818, Dom João was made king. The most enterprising of the Portuguese flocked across the sea to the new kingdom, and so a fresh strain of good Portuguese blood was introduced at a timely juncture.

In a few years Portugal, freed from the Napoleonic yoke, was asking its legitimate monarch to return, an invitation which fell in with the views of the courtiers who surrounded Dom João. He accordingly left Brazil for Portugal, leaving his son Dom Pedro as Regent. In Portugal fresh plans were made for the Government of Brazil by which all the States were to be governed from Lisbon and not from Rio de Janeiro.

Brazil's Autonomy.—Finally, the return of Dom Pedro to Portugal was ordered. Dom Pedro refused to comply with this order, and announced that any landing of Portuguese troops would be resisted. A delegation from Brazil to Lisbon was received with insult, and Dom Pedro made his declaration that he would never leave Brazil.

On 7th September, 1822, he was proclaimed Emperor

at Rio de Janeiro, and the Portuguese garrisons were turned out of the country. The new empire was accepted; and, after a revolution in the north, Dom Pedro was securely established on the throne.

Shortly afterwards, the death of his father called him to the throne of Portugal, which he promptly abdicated in favour of his daughter, whose claim was disputed by the claimant, Dom Miguel, who seized the throne. The popularity of Dom Pedro soon declined in Brazil, and his interference with his ministers precipitated a crisis. He was forced to abdicate in favour of his infant son, and returned to Portugal in 1831 to depose the usurper and seat his daughter on the throne there.

The new Emperor was but five years of age, and ten stormy years of regency followed. Then, at the age of fifteen, Pedro II was declared of age, and succeeded to the full responsibility of the empire.

Wars with Uruguay, and afterwards with Paraguay, had less influence on the progress of Brazil than the emancipation of the black slaves, which was the final work of Dom Pedro.

In 1854 there were, in Brazil, some 2,500,000 slaves, imported from the West Indies and Africa. In that year the slave trade was abolished, and subsequent legislation freed the children of slaves. When the final emancipation came in 1889, there were only half a million actual slaves in the country, but the influence of the imported negro blood had been impressed indelibly upon certain parts of the country.

The slaves did not, as was expected, stay on the plantations of their former owners; but most of them migrated

north, leaving the south with a great need for plantation labour. This, rather than discontent at the abolition of slavery, was made the excuse for an agitation against the Emperor, who had taken a prominent part in forwarding the emancipation. As a matter of fact, Brazil had outlived the monarchic stage, and wanted a more democratic form of government. But Dom Pedro was personally so popular, that he commanded the respect of the most ardent revolutionaries, and it was tacitly understood that no change was to be made in his lifetime.

The Republic.—The statement that he intended to abdicate in favour of his daughter brought these plans to nothing ; and he was deposed on 15th November, 1889, a republic being proclaimed. The change was inaugurated in the most pacific and constitutional way, and the Emperor was respectfully despatched to Portugal.

The early years of the republic were stormy. Rebellions in many of the States had to be put down, as well as opposition from without. The financial position of the country drifted into a condition perilously approaching bankruptcy, and the growing prosperity of the agriculturists was sadly hindered by lack of labour. The tasks of the early Presidents were to restore peace and order, to repair the shattered finance of Brazil, to provide a constant stream of white agricultural labourers for the southern States, and to provide communications for a country that has never been able to maintain roads.

As a country with large public and private indebtedness, Brazil has had to provide a wide margin of exports over imports, in order to meet obligations in the payment of interest on borrowings. The variations in the price

of coffee and the large decline in the value of rubber have, during recent years, caused much uneasiness as to the future of the two main exporting industries of the country. Brazilian policy has recently been centred in providing the country with new productive industries, a policy which marks the most recent stage of political development in the Republic of Brazil.

The Presidents of the republic have been—

Nov., 1889.	Marshal Manoel Deodoro da Fonseca (at first the head of the provisional government, but elected constitutional President in Jan., 1891; resigned Nov., 1891).
Nov., 1891.	Marshal Floriano Peixóto (former Vice-President).
,, 1894.	Dr. Prudente José de Moraes e Barros.
,, 1898.	Dr. Manoel Ferraz de Campos Salles.
,, 1902.	Dr. Francisco de Paula Rodrigues Alves.
,, 1906.	Dr. Affonso Augusto Moreira Penna (died June, 1909).
June, 1909.	Dr. Nilo Peçanha (former Vice-President).
Nov., 1910.	Marshal Hermes da Fonseca.

The following brief sketch outlines the salient features of the history of Brazil as a Republic. The provisional Government decreed the separation of Church and State in January, 1890; and the republic was formally recognised by the United States of America in the same month, and by Great Britain in October. The Bank of Brazil was established in February; and the first of repeated separatist outbreaks in Rio Grande de Sul occurred in May, the State being put under military government. The first Congress met in November, and the powers of the provisional Government were thereupon transferred to it.

In February, 1891, the new Constitution was passed, and Fonseca was elected President. In November

Congress, having refused the President the right of vetoing legislation, was dissolved and martial law proclaimed; Rio Grande do Sul and Pará declared their independence of the Union; and a naval mutiny broke out. In consequence, Fonseca resigned and was succeeded by the Vice-President Peixóto, who ruled by tyrannical and absolutist methods. His three years' term of office was a period of continual civil war, the land forces of the State being opposed by a strong secessionist party, led by Admirals de Mello and da Gama, who controlled the Navy. Repeated bombardments of Rio and Nictheroy took place, imperilling the relations of Brazil with foreign powers. Ultimately Peixóto prevailed, and was able, before his presidency expired, to declare the country "pacified."

In November, 1894, began a succession of civilian Presidents, under whom the distracted country attained, by degrees, union, financial reorganisation, and the confidence of foreign nations. It took a considerable time, however, before the legacy of disorder could be overcome. War broke out again in Rio Grande in 1895; a dispute with Italy occurred in 1896, occasioned by attacks on Italians in São Paulo; and a curious insurrection of religious fanatics in Bahia, under Antonio Maciel or Conselheiro, lasted from March to October, 1897. Conspiracies occurred in Rio de Janeiro, where martial law was proclaimed (Nov., 1897, to Feb., 1898); and a serious financial crisis, involving the temporary suspension of payment of the Banco da Republica, occurred in September, 1899. From this point the tide may be said to have at last turned. Financial reform improved

the credit of the country. Payment in specie was for a time suspended, and large quantities of paper money were destroyed.

At the end of 1906, under Dr. Penna, the Caisse de Conversion was established, and the rate of 15d. for paper milreis (since raised to 16d.) was fixed. Much attention was paid to the development of the resources of the country by the establishment of colonies, and the removal of tariffs on agricultural and other machinery; also to the improvement of railway facilities and the spread of education. The army and navy were reorganised and extended, the battleships *Minas Geraes* and *S. Paulo*, with other smaller vessels, being built in England for Brazil. The policy of the country meantime has been enlightened and the reverse of aggressive, some twenty-eight treaties of arbitration having been signed up to 1910, covering most of the American and several European powers.

The boundary with Bolivia was settled in 1902–3, when the territory of Acre was purchased by the Federal Government; other boundary questions were settled amicably with French Guiana in 1900 by Swiss arbitration, with British Guiana in 1904 by arbitration of the King of Italy, with Argentina and Colombia in 1907, and with Peru and Uruguay in 1910. A permanent arbitration treaty with Great Britain was signed in 1909.

On 24th November, 1910, the two "Dreadnought" battleships (mentioned above) broke into mutiny and fired on Rio de Janeiro; and, after this had been with some difficulty repressed, a second mutiny occurred.

The improved financial conditions were shown by the

resumption in January, 1910, of payments on account of the Foreign Debt, eighteen months before the period allowed by the agreement of 1898, by which amortisation was suspended for thirteen years, up to June, 1911.

The position of the Federal Government in relation to the States has gradually grown stronger during this period of peace and reform. In July, 1912, a law was passed requiring the States to obtain the Federal sanction before contracting any new loans. A new coinage was authorised in the same month. There was considerable labour unrest in Brazil during this year, culminating in serious strikes in Rio and Santos during August and at Belém in September.

Early in 1914 a short-lived revolution occurred in Ceará, accompanied by considerable disaffection in Rio de Janeiro. Martial law was proclaimed in Rio, Nictheroy, and Petropolis on 5th March, and the uprising was soon terminated.

CHAPTER V

STATES AND DISTRIBUTION OF POPULATION

SOUTHERN BRAZIL comprises only about 20 per cent. of the total area of the Republic, but it contains more than half the population. An accurate statement of the population of Brazil cannot be given; for the census which was begun in 1911 was not completed, as it was found that the sum of money voted for the purpose was insufficient. The figures given are, therefore, only approximate, being based on the census of 1906 and the known increases since that date. The area and approximate population of the seven Southern States are as follows: In Rio de Janeiro is included the Federal area—

State.	Area. Sq. Miles.	Approximate Population.
Espirito Santo	17,515	400,000
Minas Geraes	224,539	4,504,483
Paraná	86,447	516,781
Rio de Janeiro	26,945	2,189,479
Rio Grande do Sul	92,398	1,650,000
São Paulo	113,618	3,000,000
Santa Catharina	28,965	500,000
	590,427	12,760,743

The principal features of each State are given below. For further information, the reader is referred to the special Chapters on "Finance," "Manufactures," "Cities and Towns," "Imports and Exports," etc.

ESPIRITO SANTO.—In area, the State of Espirito Santo is only the eighteenth of Brazil, with 17,515 square miles

of surface. It is bounded on the north by Bahia, on the south by Rio de Janeiro, on the west by Minas Geraes, and on the east by the Atlantic Ocean. Its coast line is 250 miles long.

The population of the State is 400,000; and the principal town, Victoria, has 30,000 people. Other centres of population are: Cachoeiro do Itapemirim, Anchieta, Porto do Cachoeiro, and São Matheus.

Its principal river is the Doce; others are the Itaunas, the São Matheus, the Timbuhy, and the Itapemirim.

Its main products are coffee, rice, and other cereals; sugar, cotton, and mandioca. The forests of the State produce the very finest woods for making furniture and for building. Pallisandre, peroba, rosewood, satinwood, and páo brazil are all obtained in quantity in its forests, and the exports of these valuable timbers is annually increasing. The chief mineral wealth of the State consists of gold and precious stones.

There are already 345 miles of railway open for traffic in the State, including a line which unites Victoria, the capital, with Rio de Janeiro, the capital of the Republic. Another, the Victoria-Minas line, now in course of completion, is designed to unite the great iron fields of the State of Minas Geraes with their natural port Victoria. This is to be an electric line. There are other railway lines planned for the State. The rivers São Matheus, Doce, Santa Maria, and Itapemirim are all navigable in part, though not navigated, there being 160 miles of navigable river in the State.

The principal port is Victoria, which is dealt with fully in the Chapter on "Ports and Harbours."

Espirito Santo can only point to eight establishments considered worthy to be classed as important manufacturing concerns. These are three textile establishments: two at Victoria and one of more importance at Itapemirim. A soap and oil factory, a large sugar mill, a paper and cardboard mill, a cement factory, and a large sawmill make up the total of the important manufactures of the State. At Itapemirim there is a fine centre for the future manufactures of the State, as the town has a supply of cheap electric power and is built on a navigable river.

Minas Geraes.—The State of Minas Geraes is the fifth in area of the Brazilian States, being 224,539 square miles in extent. It is bounded on the north by Bahia; on the east by Bahia, Espirito Santo, and Rio de Janeiro; on the west by Goyaz; and on the south by Rio de Janeiro and São Paulo. It is one of the four inland States of Brazil.

Minas Geraes is the most populous State of the Republic, having a population estimated at 4,504,483 inhabitants. The capital is Bello Horizonte (40,000), founded in 1897; and other important towns are Ouro Preto (15,000), the ancient capital; Juiz de Fora (35,000), the principal manufacturing centre; Uberaba, Barbacena, Diamantina, all places of about 15,000 inhabitants; and a number of towns somewhat smaller.

There are some fine rivers in the State. The São Francisco has a course of 750 miles within the State confines; the Jequitinhonha, 675 miles; the Doce, 600 miles; while the Parnahyba and the Rio Grande are also important streams of water.

Minas is one of the best agricultural and pastoral States of the Union. It supplies the capital with nearly three-fourths of the dairy produce consumed there, including vast quantities of cheese, butter, eggs, poultry, and bacon. Coffee and cereals, as well as sugar and rice, are grown in profusion, and tobacco as well. It exports 300,000 head of cattle every year, and an immense number of pigs.

Minas Geraes was the birthplace of Brazilian manufactures, for the weaving of cotton in that State dates back to the eighteenth century. It still turns out the best cotton goods made in Brazil, and has a home industry in weaving the materials which are the specialty of the State. There are 550 important manufacturing establishments in the State, and the annual product of these totals £52,500,000 a year. Many of them exist for treating the primary products; for sugar-mills, cheese and butter factories, tanneries, and similar establishments form the bulk of the manufactories of Minas. Two iron-smelting establishments, both operating in a comparatively small way, are prophetic of the future of the State, which will before long have a great iron and steel industry. Many of the small factories in the State are very profitable, because of the cheap power derived from waterfalls, which have been employed for lighting and other purposes by energetic municipalities.

Its mineral wealth is vast, and it has the distinction of being practically the only State where mining is carried on upon systematic and scientific lines. It has liberal mining laws, which are outlined elsewhere; and a School of Mines, where practical instruction is imparted

to the young men of the State. The mineral wealth of the State includes gold, manganese, iron, lead, and many other metals. Among precious stones, the diamond mining industry is well developed, and there are large areas where such stones as topaz, aquamarine, tourmaline, etc., are in abundance. The mineral wealth of this State is dealt with at length in the Chapter on "Mining."

At the end of 1912 there were 3,470 miles of railway in working order in the State, an increase of 335 miles for the year. The lines open at the end of 1911 were—

	Miles.
West Minas	767
Victoria to Minas	155
Mogyana	196
Federaes Brazileiras	580
Juiz de Fora to Piau	36
Bahia and Minas	146
Leopoldina	545
Goyaz	128
Paraopeba	7
Central of Brazil	570

There were then under construction the following additions—

	Miles.
West Minas	156
Victoria to Minas	163
Mogyana	109
Federal Lines	78
Goyaz	129

The construction of macadamised roads has received much attention in the State during recent years, and large sums have been recently spent to great advantage in this manner. A river service of steamers navigates the São Francisco as far as Pirapora.

PARANÁ.—Paraná, the tenth State of Brazil in extent,

has an area of 86,447 square miles. It is bounded on the north by the State of São Paulo, on the south by the State of Santa Catharina and the Argentine Republic, on the east by the Atlantic Ocean, and on the west by Matto Grosso and the Republic of Paraguay. Paraná has 112 miles of coast line.

The capital is Curitybá, a city of 60,000 people, the whole population of the State being 516,781. Important centres of population are Ponta Grossa (25,000), Paranagua (10,000), and Morretes (8,000).

Four great rivers—the Parapanema, the Paraná, the Iguassu, and the Rio Negro—run along the State boundaries, and their many tributaries water the lands of Paraná. Chief among these are : the Rio das Cinzas and the Tibagy (Parapanema) ; the Ivahy, the Jacarehy, the Piquiry, the Itatu, and the de Cuassu (Paraná) ; the Jordão, the Potinga, and the Varzea (Iguassu and Rio Negro).

On the Iguassu are the famous falls, with a greater height, a greater volume of water, and a greater width than the falls of Niagara. The potential energy is estimated at 14,000,000 h.p.

The State has the great maté industry, of which nearly 100,000,000 lb. are exported each year. The agricultural industry is an important and growing one, the chief products being cereals. Paraná has the best wheat land in Brazil, and the crops of this cereal are increasing by leaps and bounds each year. The State has, in addition, vast forests of pine trees, which furnish abundantly of a wood that is excellent for all purposes for which soft wood is required. Maté woodwork and matches are the

principal outcome of the manufacturing industry of Paraná, which has 302 establishments, in which less than 5,000 workers are responsible for an annual output valued at £2,250,000. The paucity of the labour required will throw some light on the prosperity of the State and the ease with which money is made in the maté industry. Paraná has, in addition, breweries, potteries, flour mills and saw-mills,—all of some importance.

Two lines of railway traverse the country. The Paraná railway connects Paranagua with Ponta Grossa, a distance of 260 miles; and the São Paulo-Rio Grande railway connects Iterare with Ribeirão Claro, traversing the State from north to south for a distance of 260 miles. In addition to the 520 miles of line actually working, a line is being constructed to unite Rio Negro with União, and will be extended to Porto Bello, on the Paraguayan frontier.

There are 400 miles of navigable waterway on the rivers of the State; and Paraná has, in addition, the distinction of possessing the best roads in Brazil.

Rio de Janeiro.—The State of Rio de Janeiro, with which is included the Federal area, is the fifteenth in point of size among the States of Brazil, with an area of 26,945 square miles. It is bounded on the north by Minas Geraes and Espirito Santo, on the south and east by the Atlantic Ocean, and on the west by São Paulo. It has a coast line of 455 miles.

The population numbers 2,189,479, of whom 1,000,000 live in the capital city of Rio de Janeiro. The State capital is Nictheroy, an important manufacturing centre of 60,000 inhabitants; other centres of population are

Campos (30,000), Petropolis (30,000), Therezopolis, and Nova Fribourgo.

The principal river of the State is the Parahyba, of 435 miles extent; it has numerous tributaries in the State. Along the coast line are a number of lakes and lagoons.

The agricultural products of the State are many and valuable. It takes third rank, after São Paulo and Minas Geraes, as a producer of coffee, and is second only to Pernambuco in the production of sugar. Maize and rice come next, 6,000,000 sacks of the one and 1,200,000 sacks of the other being grown each year. Cotton, cocoa, and vanilla are also produced freely, and there is a great future for the State in the production of these growths.

The State possesses forests of great value, the timber of which is now being exploited; and mineral wealth, which is not yet appreciated at its full value; but lime, iron, granite, and kaolin are being worked; and gold, silver, copper, and precious stones are known to exist there, and will yet be exploited.

Rio de Janeiro is the first manufacturing State of the Republic, for there are 1,243 important establishments in the State and Federal area. These establishments give employment to 54,000 workers, and cover the whole gamut of Brazil's manufacturing activity. The textile industry comes first in importance, and the looms of the State supply woollens, silk goods, and cotton fabrics. Boot and shoe factories, hat factories, breweries, flour mills, match factories, furniture manufactories, paper mills, tanneries, preserving factories, biscuit factories, and many other industrial establishments are thriving;



Rio de Janeiro. Avenida Beira Mar

and the difficulty is to obtain workers. The evil of child and women labour is an obvious one in the factories, as evidenced by a proposal, not yet put in force, that no child under ten years of age should be employed, and that the hours of children between the ages of ten and sixteen should be restricted.

There are in the State 1,875 miles of railway in working order. One line connects Nictheroy, the State capital, with Victoria, the capital of the northern neighbouring State of Espirito Santo ; another runs north to the State of Minas Geraes ; and yet another (the Central) connects with São Paulo, Extensions and new lines are in course of construction. The river Parahyba has a steamboat service, as also the Bay of Rio de Janeiro and several of the coastal lagoons.

The State is well provided with ports and harbours, for, in addition to the great harbour of Rio de Janeiro, it has an excellent port, Jacquecanga ; and other good ports are Paraty, Angra dos Reis, Mangaratiba, Itacurussa, Sepetiba, Cabo Frio, Macahe, and São João da Barra.

Rio Grande Do Sul.—Rio Grande do Sul is eleventh in size among the States of Brazil, with an area of 92,398 square miles. It is bounded on the north by Santa Catharina, on the south by the Republic of Uruguay, on the east by the Atlantic Ocean, and on the west by the Argentine Republic.

The population of the State is 1,650,000 ; and the capital is the city of Porto Alegre, with 150,000 inhabitants. Other large cities are Pelotas (40,000), Rio Grande (40,000), Bage (25,000), and Uruguayana (20,000).

The great river Uruguay bounds the State on the north, and many of its tributaries water the plains of Rio Grande. There are also a number of smaller rivers, which fall into the great lagoons which break the coast line of the State. The principal of these rivers are the Guahyba and the Camaquam. Of the coastal lagoons, the largest is La Lagoa dos Patos, 157 miles long and 36 miles wide. It connects with Lagoa Mirim by means of a canal; the latter is 110 miles long and 34 miles broad.

Rio Grande do Sul is primarily a pastoral State, and its main product is dried meat, for which 600,000 head of cattle are annually slaughtered. At present, this State practically supplies the whole of Brazil with this article, which is one of the staples of the workman's diet, exporting 50,000 tons annually.

There is an important and growing agricultural production as well, and by reason of its temperate climate, the products of Rio Grande do Sul are more diversified than those of any other State of the Union. Rice, wheat, oats, cotton, maize, beans, and other staples all do well. Tobacco thrives everywhere, and the wine output is 6,000,000 galls. each year. Unfortunately the quality of the wine is not high, owing to faulty methods. Grapes, and all the fruit of a temperate zone, are grown in abundance. Indeed, the soil and climate are so good that anything can be grown, a recent success having been achieved with real tea, as distinct from maté.

The natural riches of the State are great, and very little developed. Coal mines at São Jeronymo, copper mines at Camaquam, gold mines at Lavras, and mines of wolfram elsewhere represent all that is being done at

present to exploit the mineral resources of this rich district. Iron, nickel, copper in abundance, precious stones and gold are widely distributed in payable quantities in the State.

The principal industry of Rio Grande do Sul is the preparation of cattle products, the most important being "charque," or dried meat. There are also 39 industrial establishments in the State; and in value of output it comes third to Rio de Janeiro and São Paulo, the value being £6,850,000 and the number of workers 16,000. It has 9 large textile mills, 13 hat factories, 19 breweries, and 10 soap works. There are, in addition, tanneries, boot factories, hat factories, and a number of preserving factories. The chief manufacturing centre is Porto Alegre, the State capital.

There are 1,720 miles of railway working in the State. One line of 480 miles joins the capital with Uruguayana on the Argentine frontier. Branches of this system join up with all the important towns, such as Pelotas, Rio Grande, Bage, and São Gabriel. The State is connected with São Paulo, and so with Rio de Janeiro, by the São Paulo–Rio Grande railway. The river Uruguay and several of its tributaries are navigable for some hundreds of miles, and the State has a number of good roads.

São Paulo.—São Paulo is ninth in extent of the States of Brazil, with an area of 113,618 square miles. It is bounded on the north by Minas Geraes, on the south by Parana, on the west by Matto Grosso, and on the east by Rio de Janeiro and the Atlantic Ocean. It has a coast line of 305 miles in length.

The population is estimated at 3,000,000 inhabitants—

a conservative estimate in all probability. São Paulo, the capital of the State, is the second city of Brazil, with a population of 400,000; Santos, the first port, has 78,000; Campinas, 50,000; Ribeirão Preto, 30,000. Very little smaller are Sorocaba, Piracicaba, Jundiahy, Cananea, and Iguape.

The river systems of São Paulo consist of the Paraná and its tributaries, and the Parahyba and its tributaries. The principal tributaries of the Paraná are the Rio Grande, the Tiete, the São José, the Aguapehy, the Rio de Peixe, and the Paranapanema. Both the Paraná and the Parahyba debouch in other States, the only river emptying into the ocean in São Paulo territory being the unimportant Iguape.

São Paulo is the chief agricultural State of Brazil and, beside producing three-quarters of the world's coffee supply, has an annual production of the following commodities: Sugar (400,000 sacks), cane spirit (30,000,000 galls.), cotton (44,000,000 lb.), tobacco (4,400,000 lb.), and immense quantities of beans, maize, rice, and other cereals.

The mineral riches of the State include gold, petroleum, marble, building stone, iron, and manganese.

Cattle-rearing is an advanced industry of the State, which also produces a large quantity of small stock and poultry.

São Paulo comes second only to Rio de Janeiro as an industrial State. Its important industrial houses are 384 in number, and the annual value of their output is £9,300,000. The money invested in textile concerns is £2,200,000, and it pays an average dividend of 11½ per



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São Paulo. Railway Station

cent. ; £800,000 is invested in foundries and metal works, and pays 9¼ per cent. Over £2,500,000 sunk in other industries, such as breweries, boot and shoe factories, and the like, pays 13½ per cent. São Paulo, the State capital, has fine modern factories on a large scale, where the motive power is electricity. The Power and Light Co. of São Paulo has harnessed the falls of the river Tieté, and power is cheap in the city, as prices go in Brazil. The State is a progressive one, and promises to rival Rio de Janeiro in the importance and success of its manufactures.

São Paulo has the best railway service of any Brazilian State, the extent of line in actual working order being 3,500 miles, while another 850 miles are in course of construction. Two of the systems of the State—the Paulista and the Mogyana—have a perfect network of lines traversing all the richest coffee-growing territory of the State. The Paulista has 720 miles of line open to traffic, and the Mogyana 780 miles. The Sorocabana system connects the capital with various points on the southern boundary of the State, and has 820 miles of line in traffic. The North-west of Brazil, with 280 miles of line, connects the centre of the State with the neighbouring State of Matto Grosso, and is being pushed into the very heart of Central Brazil. The Central of Brazil has 174 miles of line in the State of São Paulo, and connects the capital with Rio de Janeiro, the capital of the Republic. The São Paulo railway has 120 miles of line, connecting the capital (São Paulo) with the chief port (Santos). This line is a marvel of engineering skill, and for its length the most profitable railway in the world. Other

systems are the Dourado (140 miles), the Araraquara (154 miles), the São Paulo and Minas (66 miles), and the Goyaz railway, now being constructed from Bebedouro into the State of Goyaz, of which only about 20 miles are open for traffic.

The extent of navigable waterways in the State is 560 miles, the rivers navigated being the Tieté, from Porto Martins to Pederneiras (120 miles); the Piracicaba (78 miles), the Parapanema (56 miles), and the Iguape and its tributary, the Juquia (390 miles).

The roads of São Paulo are better than most in Brazil and, with the coming of the automobile to the State, are being improved in a marked degree.

Santos, the port of the State, is the best equipped port in Brazil, surpassing Rio de Janeiro in the convenience it offers for the loading and unloading of vessels. Its exports in 1912 were worth £23,000,000, and its imports £12,000,000. Smaller ports are those of Cananea, Iguape, and Ubatuba.

The following are the statistics of São Paulo for 1910—

Marriages. 22,586, or 7 per 1,000.
Births. 117,097, or 40 per 1,000.
Deaths. 64,234, or 22 per 1,000.
Migration. Entered, 64,990; departed, 27,331.
Postal Revenue. £184,000.
Telegraph Revenue. £88,720.
Extension of Lines for the Year. Telegraph, 1,165 miles; telephones, 2,812 miles.
Railways. Mileage, 3,415; receipts, £6,492,000; expenses, £3,917,000; profits, £2,575,000.

Miles of River Navigated. 560.

Shipping. 7,818,813 tons ; cargo loaded and unloaded, 1,533,420 tons.

Foreign Trade. Exports, £32,060,000 ; imports, £12,857,680.

Coastal Trade. Exports, £1,450,000.

Live Stock. Cattle, 716,500 ; pigs, 1,271,000 ; sheep, 199,000.

Manufactures. Capital employed, £9,632,000 ; value produced, £11,210,000 ; workers employed, 33,000.

SANTA CATHARINA.—Santa Catharina is the sixteenth in extent of the States of Brazil, with an area of 28,965 square miles. It is bounded on the north by Paraná, on the south by Rio Grande do Sul, on the east by the Atlantic Ocean, and on the west by the Republic of Argentina. It has 287 miles of coast line.

The capital of the State is the city of Florianopolis (formerly Desterro), on the island of Santa Catharina. The population of this city is 25,000 ; and the same number of people inhabit Blumenau, which was formerly a colony, but is now a prosperous centre of primary and secondary production. Other centres are Joinville (23,000), Itajahy (15,000), and São Francisco, a thriving port. The total population of the State is estimated at 500,000.

The rivers of the State are small, but many. Among them are the Sahy, the Itapocu, the Itajahy, the Tijucas, the Biguassu, the Cedro, the Tubarão, the Ararangua, and the Mampituba. The northern and southern frontiers of the State are watered by the great rivers Iguassu and Uruguay, and their tributaries.

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Santa Catharina is one of the wheat-growing States of Brazil, and the production of this cereal under Government encouragement is rapidly growing. Rice, bananas, and other fruits are also exported in quantity by the State. The dairy industry is well advanced ; and butter, bacon, eggs, and poultry are considerable articles of export.

Next to Paraná, Santa Catharina is the chief Brazilian producer of maté, annually producing 14,000,000 lb. of this commodity. The forests also produce pine wood of a very high quality, and the export of this timber is one of the industries of the State. Silk, coffee, and tobacco are other important products of the State.

Coal, iron, gold, platinum, silver, and precious stones have been found in the State.

The State has 415 miles of railway in traffic, of which 240 are comprised in the line from São Paulo to Rio Grande, which traverses the State from north to south. Other lines run from São Francisco to São Bento, and from Imbituba to Tubarão. The extension of the São Bento line to Rio Negro is planned, which will link São Francisco with the neighbouring State of Paraná. Similarly, a line is projected from the port of Itajahy to a point on the São Paulo–Rio Grande line. The State has some forty good roads, which serve the maté forests.

There are three good ports in the State : São Francisco, Florianopolis, and Itajahy.

Santa Catharina has 174 manufacturing establishments of importance, and the maté industry is the chief among them. There are also thirteen small textile mills and as

many tanneries. Breweries are numerous, for the population is largely of German nationality. Butter and cheese factories and lime and cement works are of considerable value, as are flour and sugar mills. The total of industrial workers in the State is just over 2,000; and the establishments, compared with those of the three leading manufacturing States, are small.

CHAPTER VI

CONSTITUTION AND DEFENCE

THE "United States of Brazil" form a republic of the federal type, organised in its main outlines on the model of the United States of North America. The Constitution at present in force was adopted on 24th February, 1891, by the representatives of the nation assembled in constituent Congress. The document is divided into five main chapters (or "titles") and ninety-one articles, and deals exhaustively with (1) the Federal organisation; (2) the privileges and disabilities of the States; (3) the municipality system; (4) the conditions and privileges of citizenship; and (5) certain general provisions.

I. The FEDERAL ORGANISATION is declared indissoluble. The former "provinces" become "States," and the "municipal district" of Rio de Janeiro becomes, pending the establishment of any new capital, the "federal district." The States have power to combine or subdivide; to levy taxation on exports to foreign countries (but not to States of the Union), on real estate and transfer of property, and on industries; and to levy certain local stamp duties and charges on postal and telegraph service. The Union alone may levy duties on imports and on foreign vessels, with general stamp duties and general postal and telegraph charges. The Union may not interfere in the States except to deal with foreign attack, civil war and disorder, the maintenance of the Federal Union, and the execution of federal decrees.

There are three main branches of the Federal Government, viz., the *Legislature*, the *Executive*, and the *Judiciary*.

(*a*) The LEGISLATURE, or Congress, consists of two Houses: the Chamber of Deputies, and the Senate. It is to meet annually on 3rd May for a session of four months, but may be prorogued or summoned to an extraordinary session. Each member receives a salary and travelling expenses.

The *Chamber of Deputies* consists of 212 members, elected in the States by direct vote for three years: one for each 70,000 people and not less than four for each State. The present representation is as follows—

Minas Geraes	37	Amazonas	4 each	
São Paulo	22	Espirito Santo		
Bahia	22	Goyaz		
Rio de Janeiro	17	Matto Grosso		
Pernambuco	17	Paraná		
Rio Grande do Sul	16	Piauhy		
Ceará	10	Rio Grande do Norte		
Federal District	10	Santa Catharina		
Maranão	7	Sergipe		
Pará	7			
Alagôas	6			
Parahyba	5			

Deputies must be Brazilian citizens of over four years' standing and on the voting register. Legislation dealing with taxation or the army and navy, or charges against the President or Ministers, may only be initiated in the Chamber of Deputies.

The *Senate* consists of 63 members (three for each State and three for the federal district), elected in the States by direct vote for nine years; one-third is renewed every three years. As a legislative body, it is presided over by the Vice-President of the Union; as a judicial body, by

the President of the Federal Supreme Court. Senators must be Brazilian citizens of over six years' standing, and over 35 years of age.

The privileges and disabilities of members of Congress, and the exclusive and other functions of Congress, are explicitly defined.

(*b*) The EXECUTIVE POWER is vested in the President (or his substitutes in certain cases). His qualifications are identical with those of a senator. He is elected, with a vice-president, by direct vote and by absolute majority for a term of four years, and may not be re-elected for the next ensuing term. His powers include the choice and dismissal of Ministers; the command in person or by deputy of the Army and Navy; the administration of these forces; and the appointment of federal judges, the Federal Supreme Court, diplomatists, and consuls. He may declare a state of siege, and negotiate treaties and conventions for reference to Congress.

He is assisted and advised by a Cabinet of seven, who each preside over one department, and whose signature is requisite to Acts affecting their department. These departments are the following—

(1) Finance; (2) Justice, Interior, and Public Instruction; (3) War; (4) Marine; (5) Foreign Affairs; (6) Communications and Public Works; (7) Agriculture, Industry, and Commerce.

Ministers may not be members of Congress, nor appear before it, nor communicate with it save by letter or by personal intercourse with its committees. They are not responsible to Congress or the law courts for advice given to the President; but they are responsible for their own

actions, and are liable to impeachment before the Supreme Court for any infringement of the law.

The President, similarly, may, on the decision of the Chamber of Deputies, be impeached before the Supreme Court (in case of common juries) or before the Senate (in case of criminal abuse of his constitutional powers).

(*c*) The *Judiciary*. This consists—for the Union—of

(1) The Federal Supreme Court, which sits in the capital (Rio de Janeiro). It has fifteen judges, appointed subject to the approval of the Senate, by the President. They are appointed for life, at a fixed salary. They are partly a court of exclusive jurisdiction (*e.g.*, for international or inter-State disputes, conflicts between federal courts, and the trial of president, ministers, or diplomatic agents), and partly a court of appeal and revision for the lower federal courts.

(2) Federal courts erected wherever necessary by Congress.

In addition to these federal tribunals, each State has its own courts, which deal with all matters not specifically federal according to the special code of the State. The municipalities have their own magistrates, elected for four years, dealing mainly with cases not involving money above a certain amount.

II. The STATES.—The States are organised in harmony with the republican ideal of the Union. Apart from the carefully delimited operations of the Union, each State enjoys local autonomy, with its own legislature, executive, and judiciary. It has a State capital, a Congress (sometimes of two Houses, sometimes of one), a president or governor and ministers, and a system of law courts

administering the State laws. From the State courts there is no appeal except (*a*) in constitutional questions affecting the Union; (*b*) in actions of *habeas corpus*; (*c*) in regard to the property of deceased foreigners, where not specifically dealt with by treaty or convention: in such cases an appeal lies with the Federal Supreme Court. The States are forbidden to make war on one another, or to refuse the currency or notes authorised by the Union.

The Federal District is administered by a council elected by the citizens, the executive proper being vested in a prefect appointed by the President for a period of four years.

While the State presidents and members of Congress are elected by majority vote, as in the case of the Union, the municipal magistrates are nominated by the President or Governor, and are not removable save by judicial sentence.

III. The Municipalities.—The States are subdivided into districts called municipalities, which possess local autonomy in matters of their own concern (*e.g.*, statistical records, sanitation, paving, road-making, lighting, water-supply, etc.). They may be associated with the State or Union in other matters, such as education. (There are, in Brazil, 3,161 municipalities.)

IV. Citizenship.—Citizens over 21 years of age, duly registered, have voting rights; but the following may not be registered: (1) Beggars; (2) illiterates; (3) soldiers on the strength; (4) members of monastic or other orders, subject to vows of obedience implying the surrender of individual liberty.

In the "Declaration of Rights," full freedom is granted

for the right of public worship and of holding property for that purpose; civil marriage alone is recognised by the republic, and is gratuitous; no connection is allowed between any sect or church and the Union or the State Government, nor may any official aid be given; banishment, the death penalty, and the galleys are abolished; and the usual personal rights and rights of property are enacted.

V. The General Provisions deal with such matters as internal disorder, revision of judicial sentences, the Army and Navy, the amendment of the Constitution, payment of public debt, and auditing of accounts. The clause abolishing compulsory recruiting for the Army has been superseded by the law of January, 1908 (see *Army*, below). It is enacted that any citizen invested with the functions of any one of the three federal powers may not exercise those of another; hence a minister of State (belonging to the Executive) may not be a member of either House of Congress (Legislature) or of the Supreme Federal Council (Judiciary).

Defence

The Army.—By the law of January 4, 1908, every Brazilian citizen is liable to military service from his 21st to the completion of his 44th year, as follows: Two years in the ranks, seven in the reserve, seven in the Territorial Army, four in the National Guard, and four in its reserve.

The Army contains—

Infantry: 15 regiments of 3 battalions of 3 companies each; 12 battalions of chasseurs. Each battalion has a machine-gun section of 3 mitrailleuses.

Cavalry : 9 line and 3 independent regiments, of 4 squadrons each ; 5 regiments of 2 squadrons each for divisional cavalry ; 12 sections of scouts.

Artillery : Field artillery, 5 regiments, each of 3 divisions of 3 batteries, with 4 guns each ; 5 Howitzer batteries of 6 guns each ; 2 divisions of mountain guns, with 3 batteries each (4 guns) ; 3 divisions of horse artillery, with 3 batteries each (4 guns) ; garrison artillery, 8 battalions ; heavy artillery, 36 batteries ; engineers, 5 battalions.

The peace establishment is 32,000, with 2,626 commissioned officers ; the war strength is over 300,000. The country is divided into 13 Territorial districts. Five "strategical" brigades and 3 cavalry brigades are stationed near the frontiers of Paraguay, Argentina, and Uruguay.

There is also a force of 20,000 gendarmerie.

The Navy consists of upwards of 30 vessels, including 2 "Dreadnoughts" of 1907 (the *Minas Geraes* and the *São Paolo*), 2 older battleships of 1898, 2 scouts, 3 torpedo cruisers, 2 gunboats, 10 Yarrow and 4 other destroyers, with submarines, school ships, and other vessels. The "super-Dreadnought," *Rio de Janeiro,* was sold on completion to Turkey, and never formed part of the active Navy.

The *personnel* includes 515 officers, 6,000 seamen, 1,500 firemen, 600 marines, and 5,000 boys.

The chief naval arsenal is at Rio de Janeiro ; there are also naval bases at Pará, Bahia, Pernambuco, and Ladario de Matto Grosso (a river arsenal on the Upper Paraguay).

CHAPTER VII

FINANCE : FEDERAL AND STATE

FINANCE.—The outstanding features of Brazilian national finance are a rapidly rising revenue and an expenditure that is increasing even more rapidly. The result is, of course, a public debt that is growing every year.

The revenue has risen from (in round figures)£21,000,000 in 1902 to £37,000,000 in 1911, and during the same period the expenditure has risen from £20,000,000 to £44,000,000.

In the interim there have been one or two years when receipts have been made to balance expenditure, but the tendency to over-expenditure has been evidenced by an average deficit of over £2,000,000 per annum.

The main sources of national revenue may be approximated as follows—

	£
Import duties	18,000,000
Internal revenue	5,000,000
Consumption taxes or Excise duties	3,000,000
Export duty (Acre rubber) ..	1,000,000

From these sources is derived three-fourths of the annual revenue ; and the bulk of the remainder is ear-marked for special purposes, such as the construction of harbours, etc. In his Budget speech for 1914, the Minister of Finance declared that these taxes were as much as the country and its trade could bear, and that the only way of squaring finances was a reduction of expenses.

The Brazilian expenditure is divided into two classes by Brazilian finance experts : Ordinary expenditure and

5—(2250)

extraordinary expenditure. Ordinary expenditure is the recurring cost of administration, etc. ; while extraordinary expenditure covers the money spent in providing for emergencies which may not be expected to repeat themselves, such as the construction of railways, the building of warships, and similar contingencies. These extraordinary expenditures are calculated to average some £4,000,000 a year ; thus the ordinary expenditure is less than revenue by nearly £2,000,000 a year. The extraordinary expenditure has, however, been creeping up to a figure far beyond £4,000,000 a year ; and in proposing his Budget for 1914, the Minister for Finance revealed a deficiency for 1913 amounting to £7,200,000. His proposals for 1914 showed a probable balance between expenditure and income, the Minister remarking—

" Brazil is a new country and full of resources without doubt, but it is not practical that it should be overwhelmed by a burden greater than its strength. It is requisite that there should be a pause in the headlong rush of public expenditure, so that the nation may have time to recover and reconstruct its elementary life and its credit.

" It is sufficient to realise that the public revenue cannot be augmented by fresh imposts to comprehend easily that unless this artificial life cease the country will shortly become asphyxiated by loans and unable absolutely to meet its engagements and charges ; consequently, it is incumbent on public men to come to its aid, by adopting the only course feasible : that of positive economies and restricting with a hand of iron all superfluous outlays."

The application of the Minister's speech will be grasped when it is stated that on the 30th June, 1912, the sum of Brazilian indebtedness was £200,000,000 distributed as set out on next page.

	£
External debt	95,000,000
Consolidated Funds	45,000,000
Liquid debt	18,000,000
Paper Issue	41,000,000

On this debt interest amounting approximately to £7,750,000 has to be paid annually. For the extinction of this debt no provision is made, except in regard to the paper issue, which will be dealt with presently.

In the meantime it has to be pointed out that the National Debt represents only a part of Brazilian indebtedness, for the finances of the States, in some cases, show a similar tendency to over-expenditure.

This has also been met by borrowing, so that the sum of Brazilian State indebtedness at the end of 1911 had reached the sum of £66,346,800. To this must further be added the sum of municipal indebtedness, which, according to the last published figures, totals £10,298,720. The total public obligation of Brazil, therefore, exceeds in amount £275,000,000; while up to the present the prosperity of the country is dependent, principally, upon the maintenance of the prices of its two chief commodities: coffee and rubber. The fluctuations of these commodities in the market affects the value of all Brazilian securities very rapidly, and accounts for the uneasiness created by Brazilian financial methods.

Inextricably interwoven with Brazilian finance is the question of the Brazilian currency. Brazil has no gold coinage, but a paper one, which in the markets of the world is worth a good deal less than its face value. The milreis is nominally worth 27 pence, but its value in international commerce is at present 16 pence. This

difference between the nominal value of the paper money of the country and its value as a medium of exchange is due to the over-issue of notes in the period which followed the proclamation of the republic. At that era, in 1889, the exchange value of the milreis note was above par, for it stood at 27½ pence. In April, 1898, it had fallen to 5½ pence, and the credit of Brazil seemed shattered.

The first step to a restoration of credit was made in 1898, when the creditors of the country agreed to accept bonds as interest in the place of cash. As the bonds were issued, a nominal cash payment for the same amount in paper was made at the face value of 18 pence per milreis. This paper was immediately destroyed, and thus the paper currency in the country was reduced by each payment of interest; for the further issue of paper money was prohibited by law. In 1898 there was paper money in circulation of the face value of £86,500,000; by the end of 1912 it had been reduced to £67,500,000, paper of the nominal value of £19,000,000 having been destroyed.

The law of the 20th July, 1898, which stopped the issue of paper money, also established a fund for the guarantee of the paper circulation, by setting aside 5 per cent. of all federal receipts in gold for that purpose. This fund had mounted by the end of 1911 to £12,500,000; but the *Economic Annual of Brazil* of 1911 remarks of this fund that, succeeding governments having applied the money to meet extraordinary expenses, its existence remains almost theoretical.

The funding loan and the check to the issue of paper currency had a good effect on the rate of exchange, and that began to rise immediately. From 5½ pence in 1898

it rose to an average of 11⅜d. in 1901 and to 15d. and over in 1905. Since 1911 it has been 16d., and sometimes a little better.

To maintain a stable rate of exchange was the next problem which confronted the Brazilian financiers. For this purpose, the Caixa de Conversion was instituted in December, 1906, and the issue of convertible paper currency was begun. The rate of exchange was then fixed at 15 pence, and paper was issued by the Caixa at this rate in return for gold. This institution at once steadied the rate of exchange. For, when the rate was above 15d., local holders of gold at once went to the Caixa and exchanged their gold for convertible paper, making a profit on the transaction. When the exchange fell below 15, they returned the paper and withdrew the hoarded gold. Since the establishment of the Caixa, it has been possible to maintain a stable rate of exchange. In 1911 it was possible to increase the rate of exchange to 16 pence, at which rate the convertible paper of Brazil is now exchanged at the Caixa. On the 31st December, 1912, the convertible notes in issue were worth £24,675,000, and the inconvertible paper had a face value of £67,500,000 or an exchange value of £40,500,000.

Another financial measure of the Government merits brief mention here. It commenced in 1900, since when a certain proportion of the Customs import duties have been collected in gold. In some cases the proportion is 35 and, in others, 50 per cent. Thus the Government is always supplied with the necessary gold for its payments abroad.

These things being understood, it is possible to present the Brazilian Budget proposals for 1914 in milreis. Milreis in gold can be reduced to pounds sterling approximately by dividing by 9, and milreis paper by dividing by 15.

The revenue for 1914 is estimated at 132,584,884$888 gold and 372,046,000$ paper; that is—

	$
In gold—	
Ordinary revenue	107,294,884$888
Ditto with special application ..	25,290,000$
Total	132,584,884$888
In paper—	
Ordinary revenue	352,196,000$
Ditto with special application ..	19,850,000$
Total	372,046,000$

equalling, in paper and gold, approximately £39,600,000.

The expenditure for 1914 is estimated at 93,385,691$234 gold and 433,153,777$535 paper, as follows—

In gold—	
Ministry of Justice and the Interior	13,000$
Ministry of Foreign Affairs	2,932,988$991
Ministry of Marine	500,000$
Ministry of War	300,000$
Ministry of Roads and Public Works	10,660,859$136
Ministry of Agriculture, Industry and Commerce	1,050,000$
Ministry of the Exchequer	52,638,843$107
	68,095,691$234
Application of the special revenue..	25,290,000$
	93,385,691$234

In paper—	
Ministry of Justice and the Interior	48,935,221$392
Ministry of Foreign Affairs	2,323,600$
Ministry of Marine	44,614,040$648
Ministry of War	77,715,355$427
Ministry of Roads and Public Works	111,248,461$356
Ministry of Agriculture, Industry, and Commerce	24,287,147$158
Ministry of the Exchequer	109,179,951$554
	418,303,777$535
Application of the special revenue..	14,850,000$
	433,153,777$535

an expenditure, in paper and gold, amounting approximately to £39,264,000.

From which it is deduced that the receipts in

Gold being	132,584,884$888
And the estimated expenditure ..	93,385,691$234
The balance will be	39,199,193$654
The receipts in paper being ..	372,046,000$
and the estimated expenditure ..	433,153,777$355
The deficit will be	61,107,777$355
Comparing, however, with this deficit the amount resulting from the conversion of the balance in gold of 39,199,193$654 into paper at an exchange of sixteen pence ..	66,148,639$246
a balance will remain of	5,040,861$891

or, in English money, £336,000 approximately.

An announcement at the end of 1914 that these estimates had been realised would certainly restore to some degree the confidence in Brazilian finance, which had been shaken during 1913 by the rising deficits and national indebtedness.

STATE FINANCE.—The revenues of the Brazilian States are derived, in the main, from export duties upon their staple products. The average revenues of the seven States of the south are approximately as follows—

State.	Revenue. £ sterling.	Expenditure. £ sterling.		Balance. £ sterling
Espirito Santo ..	200,000	160,000	+	40,000
Minas Geraes ..	1,520,000	1,800,000	–	280,000
Paraná	480,000	480,000		—
Rio de Janeiro ..	600,000	720,000	–	120,000
Rio Grande do Sul	1,000,000	960,000	+	40,000
Santa Catharina ..	120,000	120,000		—
São Paulo ..	2,880,000	4,360,000	–	1,480,000

The deficits shown by these figures are eloquent of the tendency of the expanding and prospering States to "outrun the constable," and it is not surprising to find that these are the States with the heaviest liabilities. The value of the assets in which the borrowed money is sunk is, of course, largely dependent upon the maintenance of prosperity, and it must be remarked that the feeling of uneasiness existing is due to the fact that so much of that prosperity is based on the value of coffee.

The following were the obligations of the seven Southern States at the end of 1911—

State.	External. £ sterling.	Internal. £ sterling.	Floating. £ sterling.
Espirito Santo ..	1,179,600	379,680	3,640
Minas Geraes ..	6,734,400	3,342,720	600,720
Paraná	800,000	30,440	—
Rio de Janeiro ..	3,000,000	1,762,800	280,280
Rio Grande do Sul	—	457,320	115,800
Santa Catharina	245,280	127,560	11,760
São Paulo ..	4,385,800	3,010,360	882,560
	16,345,720	9,110,880	1,894,760

or a total of £27,350,720, to which must be added the debt of the Federal area a sum in all of £20,837,120, making a total of State indebtedness for South Brazil of £48,187,840.

The following brief survey of the finances of the Southern States is based, as far as possible, on the figures of 1911.

Espirito Santo. Revenue (1910), £210,000; expenditure, £172,000; surplus, £38,000; debt (1912), £1,569,947. The revenue of the State is almost all due to an export duty on coffee, amounting to 11 per cent. *ad valorem.*

Minas Geraes. Revenue (1911), £1,558,000; expenditure, £1,980,000; deficit, £422,000; debt (end of 1911), £10,740,740. The revenue of the State is derived from the following export duties: Cotton, 4 per cent.; sugar, 2 per cent.; rubber, 3½ per cent.; cocoa, 2 per cent.; coffee, 8½ per cent.; hides, 11 per cent.; tobacco, 8½ per cent.; wood, 9 per cent.; skins, 10 per cent.; and a surtax of 10 per cent. on the amount of duty paid in each case.

Paraná. Revenue (1911), £440,000; expenditure, £370,000; surplus, £70,000; debt (1912), £630,000. Revenue derived from export duties of maté and timber.

Rio Grande do Sul. Revenue (1911), £1,086,000; expenditure, £816,000; surplus, £269,208; debt (1912), £577,672. The revenue duty is imposed on the following exports: Cotton, 3 per cent.; sugar, 3 per cent.; rubber, 3 per cent.; coffee, 3 per cent.; hides, 2 per cent.; tobacco, 6 per cent.; wood, 3 per cent.; skins, 3 per cent.; dried meat, 2 per cent.

Rio de Janeiro. Revenue, £620,000; expenditure,

£715,000; deficit, £95,000; debt, £5,043,000. Export duties: Cotton, 4 per cent.; sugar, 2½ per cent.; cocoa, 2½ per cent.; rubber, a halfpenny a lb. (about); coffee, 8½ per cent.; hides, 9 per cent.; tobacco, 9 per cent.; wood, 7 per cent.; maté and salt also pay small duties.

Santa Catharina.—Revenue (1911), £165,300; expenditure, £163,500; surplus, £1,800; debt, £384,600. The revenue of the State is derived from the following export duties: Sugar, 5 per cent.; coffee (husked), 8 per cent.; coffee (not husked), 17 per cent.; hides, 10 per cent.; dried tobacco, 2 per cent.; prepared tobacco, 8 per cent.; prepared wood, 6 per cent.; wood (in the rough), 12 per cent.; skins, 5 per cent.; In addition, a surtax of 10 per cent is levied.

São Paulo. Revenue (1911), £4,233,000; expenditure, £5,590,000; deficit, £1,327,000; debt (May, 1912), £11,267,400. The revenue of the State is derived from the following export duties: Coffee (superior), 9 per cent.; coffee (inferior), 20 per cent.; tobacco, 8½ per cent. and a surtax of 10 per cent. There is an additional charge of 4s. a sack (132 lb.) on coffee in connection with the State's valorisation of coffee on operations. These operations are inextricably interwoven with the finance of the State; and make its exact position very hard to determine, since it is affected so greatly by the price ruling for coffee.

The operations, in brief, may be described as the purchase from the grower of stocks of coffee at £1 14s. the cwt., mortgaging the coffee for 80 per cent. of the market value, and holding it until it can be sold at a price which will cover the cost of these transactions. The State must

buy when coffee is cheap in the world's markets, and sell when it is dear; and the attempt by this means to keep up the price of coffee cannot yet be pronounced successful. As a matter of fact, the price of coffee is obviously dependent to a very great extent on production, as the fluctuations between good and bad seasons have proved since the valorisation operations were initiated.

The effect upon the finances of the State of São Paulo seems to have completely puzzled the official statisticians of Brazil, for the following figures of State indebtedness are published in the official publication (*Annuaire Économique*): End of 1910, £26,170,320 (*Annuaire Économique*, 1st year, 1912); end of 1911, £8,720,000 (*Annuaire Économique*, 2nd year, 1913); May, 1912, £11,267,400 (*Annuaire Économique*, 2nd year, 1913).

It has been estimated that the valorisation operations cost the State at least £3,000,000 a year, or quite 60 per cent. of the State income, a proof of how completely the State's prosperity is still bound up with the future of the one product—coffee.

The municipal debts of Brazil are largely due from the Southern States, as the following list will show—

Municipality.	External. £ sterling.	Internal. £ sterling.	Total. £ sterling.
São Paulo ..	—	303,080	303,080
Santos	1,000,000	—	1,000,000
Campinas ..	—	108,120	108,120
Other Municipalities of S. Paulo ..	—	241,200	241,200
Nictheroy ..	— (Liquid)	{547,800 / 33,320}	581,120

Municipal Debts—*continued.*

Municipality.	External. £ sterling.	Internal. £ sterling.	Total. £ sterling.
Petropolis ..	—	64,920	64,920
Curitybá ..	—	80,000	80,000
Bello Horizonte	—	3,847,440	3,847,440
Rio Grande ..	—	109,680	109,680
Pelotas	—	600,000	600,000
Porto Alegre ..	600,000	363,000	963,000
Other Municipalities of Rio G. do Sul	—	60,160	60,160
			£7,959,320

Thus the Southern States are responsible for 80 per cent. of the municipal debt of Brazil.

CHAPTER VIII

SOCIAL CONDITIONS

SOME account of the social conditions of Brazil, as far as they affect the foreigner who may wish to dwell there, or who may have business transactions with Brazil, will be of value. It must be remembered that the Brazilian race is the outcome of the fusion of the original colonising Portuguese with the aboriginal Indians, a third element having been introduced by the importation of negro slaves. These were afterwards freed, and have formed a component part of the Brazilian race.

The language of the country is Portuguese, and the customs are those of the Latin races, modified to some extent by the climate and the conditions of living. The immigration which has taken place from Europe into Brazil has been mainly from the peoples of the Latin races, who are readily absorbed into the mass of Brazilian citizens.

RIGHTS OF FOREIGNERS.—The laws of the country are designed to place the foreigner upon an equal footing with the citizens of the country. To the foreigner is denied nothing except political rights, and these are granted to him as soon as he becomes naturalised. He may exercise the right of assembly and of a free expression of opinion ; he may openly denounce the abuse of authority, and demand that responsibility be placed upon those responsible for such abuses.

His house is his inviolable retreat ; nobody may enter

it by night without his consent, except for preventing accident or crime; nor by day, except in due legal form. The secret of his correspondence is inviolable. He is entitled to the benefit of the free and secular education which the States provide, and may follow any creed or religion openly and publicly. Marriage is a civil ceremony, but he may celebrate it also with any religious ceremony that may accord with his belief.

The foreigner has the right in time of peace of access to the territory of the nation, or of leaving it with his fortune and his goods, without the necessity of a passport. In every way, Brazilians and foreigners are equal in the sight of the law, except that in some cases the foreigner has the advantage of being able to plead the laws of his own country He may exercise any intellectual or industrial occupation without any further let or hindrance than the proof of the qualifications of such profession demanded in all civilised communities.

The Constitution of Brazil is, therefore, as liberal to the foreigner as that of any country in the world.

Cost of Living.—The stranger who visits Brazil, or goes to live there, must be prepared to find the cost of living very high. Even in Southern Brazil, where the productive industries have reached a certain stage of development, this is the case. The causes are the protective tariff, the high rents demanded in the large cities, and the exalted scale of expenditure maintained by the city dwellers.

Rio de Janeiro is possibly the dearest city in South Brazil. The British Consul, in his Annual Report for 1911–12, repeats an estimate he made before, to the

effect that the cost of living in Rio de Janeiro is three times that of living in Europe. He mentions the high rent as one of the causes, and notes a tendency to increase rather than reduce rentals. This is accounted for by the fact that the original city is built on a space between the seashore and the high hills, and that the only way of expansion is now along the sides of these steep hills. This means costly building, and the building expansion has not been keeping pace with the increase of the population of the city for some years. The high rents exacted from shopkeepers are naturally put on to the prices of commodities, and the scarcity of manual labour has also an effect in making life dear.

In São Paulo the same reasons contribute to the dearness of living, but in a less marked degree. In the other capitals of South Brazil, rent and provisions are cheaper, and life is not so costly. The cheapness of provisions in these cities—Porto Alegre, Bello Horizonte, Curitybá, and Florianopolis— is due to the establishment in their vicinity of agricultural colonies of immigrants, who "peddle" their vegetables, poultry, and dairy produce in the markets of the cities at reasonable prices. Victoria, the capital of Espirito Santo, maintains the Brazilian record for costly living, because recent developments have given the port an added traffic, and the population has increased in a surprising manner. Building operations have not kept pace with the increase in population and prosperity, and, therefore, rents and living are costly.

Some idea of the cost of rent in the cities of Southern Brazil may be gathered from the following data.

Rio de Janeiro: A suburban flat costs £10 a month; a whole house twice as much. In a good city quarter, a flat lets at from £20 to £50 a month. A good hotel costs 30s. a day, wine not included; and a family hotel from 15s. to 24s. a day. Boarding houses charge from £4 to £3 a week.

São Paulo: The prices of apartments and flats near the city centre are equal to those in Rio; but there are some suburbs where cheaper accommodation can be obtained. The hotel, and boarding house prices are slightly lower than those of the Federal capital.

Porto Alegre: Small houses, £4 a month: larger ones £6 to £8 and upwards. Good hotels, £1 to 25s. a day; family hotels, 15s. to 10s.; cheaper ones and pension establishments, £2 to 50s. a week.

Curitybá: Small houses, £2 to £3 a month; larger ones from £4 to £6. Good hotels, 8s. to 15s. a day.

Bello Horizonte: Two or three rooms, £3 a month; a whole house, £6 a month. Hotels, 8s. to 15s. a day.

The cost of provisions in São Paulo is the subject of an official document, in which the following prices are quoted, though some at least are not retail prices, but wholesale.

Milk, 4d. a qt.; butter, 10d. a lb.; eggs, 1s. 3d. to 1s. 6d. a dozen; beef, 4d. a lb.; pork and mutton, 8d. a lb.; bacon, 6d. a lb.; purified lard, 6½d. a lb.; potatoes, 12s. 6d. a cwt.; maize, 3s. a bushel; wheaten flour, 20s. a cwt.; mandioca flour, 15s. a cwt.; maize meal, 5s. 6d. a cwt.; rice, 5s. a bushel; rice, best prepared, 12s. a cwt.; sugar, raw, 18s. 6d. a cwt.; sugar, refined, 25s. a cwt.; sugar, rum, 2s. a gal.; beans, 7s. a bushel; tobacco, prepared, 9d. a lb.; chickens, 3s. 6d. a pair; pullets, 4s. a pair; ducks, 4s. a pair; turkeys, 8s. to 10s. each.

Similar markets exist in Bello Horizonte and Porto Alegre, where the prices of provisions are little higher than in Curitybá.

In Rio de Janeiro, owing to the fact that most of the provisions of the State come by rail from the State

of Minas Geraes, and because of the excessive rents, provisions are considerably dearer than in São Paulo.

Another heavy item of expenditure in Brazil is that of clothing ; and, as the Brazilians of both sexes like to be well dressed, clothes form a very heavy item in their expenditure. The heavy duties make material dear, and the scarcity of labour and high rentals make workmanship also very costly. " A Brazilian of moderate income," writes M. Pierre Denis, in his book *Brazil*, " economical in his habits and living in the city, will spend upon his clothes about a third of his income." The same writer points out that another cause of the excessive cost of living is the high rate of interest charged as a result of the scarcity of capital. " Your rent is high," he says, " because the house was built with money borrowed at 10 per cent."

One of the cheapest cities in Brazil is Curitybá, the capital of the State of Paraná. M. Paul Walle, who has written a detailed account of the various States of Brazil, gives the following price of commodities as those reigning in the markets of Curitybá—

Potatoes, 9 lb. a 1s. ; rice, 3d. a lb. ; beans, 7s. a bushel ; maize, 10s. a bushel ; bacon and lard, 6d. a lb. ; fresh pork, 4d. a lb. ; fresh beef, 4d. a lb. ; Charque, 8d. a lb. ; onions, 1d. a lb. ; coffee, 4d. a lb. ; wine (local), 6d. a qt. ; beer, 10s. a dozen bottles ; chickens, 1s. 6d. to 2s. each.

EDUCATION.—Brazil places so high a value upon education, that no illiterate may exercise the franchise. Education is free and secular, and is provided by the States and municipalities in the primary and secondary stages. Facultative colleges are administered by the Government of the Union, as follows : Medicine and

engineering at Rio de Janeiro ; law at São Paulo ; mines at Ouro Preto ; medicine at Bahia ; and law at Pernambuco. Affiliated to the Government institutions are a number of other colleges, including a faculty of law and another of social and applied science in Rio ; a faculty of Law in Minas Geraes ; a School of Engineering in Recife ; a School of Medicine in Porto Alegre ; and schools of Law and Engineering in Bahia.

The primary schools and number of scholars attending them in South Brazil are as follows—

State.	No. of Schools.	No. of Scholars.
Espirito Santo	271	7,340
Minas Geraes	1,724	140,645
Paraná	No statistics published.	
Rio de Janeiro	877	58,233
Rio Grande do Sul	1,197	85,000
São Paulo	1,445	157,971
Santa Catharina	213	6,866

The statistics for Rio de Janeiro State include the schools of the metropolis, which are not chargeable to the State revenue, but are either municipally provided or paid for by the Union.

The amount spent on primary education by the seven States in 1911 was—

State.	Expense. £ sterling.	Percentage of State revenue.
Espirito Santo	24,000	8
Minas Geraes	277,530	15
Paraná	65,500	19
Rio de Janeiro (state) ..	101,400	17
Federal area	588,800	28
Rio Grande do Sul	180,000	21
São Paulo	688,000	15
Santa Catharina	23,785	15



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São Paulo. Viaduct and Municipal Theatre

Of the sums so spent on primary education, 20 per cent. is repaid to the States by the Federal Government.

The value set upon education would lead the visitor to expect good newspapers in Brazil; and in the cities of the South he will not be disappointed. The leading daily paper of Rio de Janeiro is the *Jornal do Commercio*, an accurate and up-to-date presentation of the news, not only of South America, but of the whole civilised world. Other dailies of excellent quality exist in the capital and in the capitals of the States. The following is a list of newspapers of South Brazil—

Newspapers

Rio de Janeiro.—Morning papers: *Jornal do Commercio, Gazeta de Noticias, O Paiz, Jornal do Brazil, Correio da Manha, A Imprensa Folha do Dia, Diario de Noticias.* Evening papers: *A Noticia, A Tribuna, O Seculo, Correio da Noite, Gazeta da Tarde, A Noite.* Illustrated Reviews: *O Malho, Fon-Fon, Careta, A Illustração Brazileiro.* Monthly Reviews: *Kosmos, Leitura para Todos, Renascença.* Reviews of the Quarterlies: *Instituto Historico* and *Liga Maritima Brazileiro.*

São Paulo.—Dailies: *Correo Paulistana, Diario Popular, Commercio de São Paulo, Platea.*

Porto Alegre.—Dailies: *Jornal do Commercio, A Federação, Correo do Povo, Gazetta do Commercio.*

Curitybá.—Dailies: *A Republica, O Paraná, Diario da Tarde.*

Bello Horizonte.—*Diario de Minas, Minas Geraes, Diario de Noticias.*

FLORIANOPOLIS.—*O Dia, O Albor.*

VICTORIA.—*Commercio do Espirito Santo, Diario da Manha, A Renascença.*

RULES FOR IMPORTERS.—With a few unimportant exceptions, all goods sent from abroad for consumption in Brazil, whether they arrive by land or sea, must have Consular invoices sent with them. These invoices are made out in three copies : one to be sent to the Customs of the port of destination, another to the Commercial Statistical Department at Rio de Janeiro, and the third copy to be kept in the Consular office. The first copy must be written in indelible ink, either by hand or machine ; the other copies may be written in any way, so long as they are legible. The Consular fees are 6s. 9d., and the first copy of the invoice must bear stamps to that amount.

If there is no Consular Agent at the port of dispatch, the consignees of the goods must produce two copies of the commercial invoices at the Customs, at port of delivery, before the goods can be cleared, and at the same time pay the customary Consular fees.

Consular Invoices.—The Consular invoices must contain the following information—

Number of the invoice (*this is inserted by the consular authority*) :
Declaration (*this must be signed by the shipper, his agent, or the exporter*) :
Name and nationality of the steamer :
Shipping port of the goods :
Port of destination of the goods :
Total value declared, including freight and approximate expenses incurred after the goods were bought :
Marks and numbers :

Quantity and description of the packages :
Specification of the goods :
Weight in kilogrammes :
The weight of the packages in one column, the weight of the goods in another, and the gross weight of goods and packages in the third :
The value of each article of the shipment in a column set apart for that purpose :
The name of the country where the goods were produced :
The quantity of goods in cases where duty is paid not by weight but by the number :
When goods from different countries have been included in one invoice, the shipper should intimate where each article was produced.

The invoices can be made out in the language of the country from which they are shipped, but the consignee must produce a translation of the specification before the goods will be cleared. If desired, the shipper can have the invoices made out in parallel lines : one in Portuguese and the other in the language of the country of export. Printed invoice forms are supplied free at the Consulates.

For differences between the Consular invoice and the actual goods when examined in the Customs at port of destination, the punishment of double duty may be imposed. If, for instance, an attempt to evade part of the legitimate duty is disclosed by such examination, or if the weight of the goods exceeds the declared weight by more than 10 per cent.

Trade Marks.—The law of trade marks in Brazil is comprehensive and complete. A trade mark may be registered locally ; the trade marks of other countries in diplomatic relation with Brazil will be recognised after compliance with due forms, and international trade marks are safeguarded.

In Brazil the trade mark must be registered at the Chamber of Commerce, where the establishment of the owner of the article to be protected is situated. The mark must be deposited at the Chamber of Commerce at Rio de Janeiro, and the description published in the official Government organ of the district. The trade mark is registered for a period of fifteen years, and is renewable at the end of that period.

Trade marks registered in countries in diplomatic relationship with Brazil are protected in Brazil if a certificate of foreign registration is lodged with the Chamber of Commerce at Rio de Janeiro, and the mark and description are published in the *Diario Official* of that city.

International trade marks which have been registered at the International Bureau at Berne are also recognised in Brazil after the compliance with formalities already outlined.

In Brazil, infringement of a trade mark is a criminal offence, and the offender is liable to imprisonment for six months as well as a fine.

PATENTS.—Brazil grants patents for a term of fifteen years and provisional protection for the period of one year. Application for a patent must be made to the office of the Minister of Agriculture, and specifications and plans and drawings must be deposited in duplicate. The specifications must be written in Portuguese. The Brazilian system of weights, measures, etc., must be employed.

The cost of taking out a patent in Brazil from this country is approximately £35; and, in addition, the following annual tax must be paid: First year, 26s. 8d.;

second year, 40s. ; and 13s. 4d. for each additional year for the period covered by the patent. A patent lapses when the patentee has made no effective use of the invention for three years.

TRAVELLERS' SAMPLES.—Samples of little or no value are admitted free of duty on a proper petition being made by the party concerned, and after due examination and verification by an employee appointed by the Inspectorate. Samples of no value are defined as fragments of part of any merchandise in such quantity only as is absolutely necessary to afford a proper appreciation of its nature, species, or quality, and the duties on which would not exceed 1s. 4d. a package. Complete objects, but such as are already rendered unfit and useless for the purpose for which they are intended, are also considered as of no value ; no merchandise may, however, at the time of its examination or verification be rendered useless with the object of freeing it from the import taxes.

In the case of samples of value, the traveller either must pay the taxes or must guarantee the taxes by signing a bond of responsibility with a proper surety (a bank or registered merchant) binding himself to re-export the goods within the period allowed by the inspector. This period may be prolonged. The bond of responsibility within the period of one year (maximum) is only annulled by production of documentary evidence of the destination of the goods.

The following will be considered proper legal documents :

(1) From ports where there is a Custom-house ; a certificate *verbo ad verbum* of the clearance of the goods through the Customs.

(2) From ports where there are no Custom-houses; an attestation from the local authorities, from persons to whom the goods were consigned, or to whom they were delivered, either as consignee, depositary, or buyer.

(3) Proof of the shipwreck, stranding or capture of the ship, with documents which in law will be recognised as *bonâ fide*, will in all cases have the same effect as the certificate of Customs Clearance dealt with in Section 1.

The documents mentioned in (2) and (3) must be legalised by Brazilian Consular officers.

Articles belonging to operatic or dramatic companies, circus and other travelling companies giving public performances, scientific collections of natural history, numismatics and antiquities, statues and busts of any description for purposes of exhibition or public display, foreign goods intended to be placed in the industrial exhibitions which may be held in the country, are all exempt from Customs duty.

CHAPTER IX

PORTS AND HARBOURS

It is a matter of common knowledge that Brazil possesses in Rio de Janeiro one of the three best natural harbours in the world. The country has others little inferior, but until quite recently the harbours of Brazil had to rely upon their natural advantages. The first Brazilian harbour to be equipped for the adequate and convenient loading and unloading of great ships was Santos, the port of the State of São Paulo. The equipment of this port was made necessary by the enormous export trade in coffee, and by the waste of time caused by bad equipment. When the first harbour works were completed and thrown open for the use of shipping, a momentous discovery was made by the authorities, viz., that in a properly constituted port, with handy Customs House and stores for merchandise, the duties paid increased out of all proportion to the trade.

Within a year of the opening of the new port works at Santos, the duty paid doubled itself, and the increase was marked also in the next two years. The old system, or want of system, had helped those who wished to avoid paying duty. Brazil draws its main revenue from import and export duties, and the authorities were not slow to take the lesson. Before many years had elapsed, Parliament had made provision for the amelioration of all the ports and harbours of Brazil. To provide means, it was arranged that a tax of 2 per cent. *ad valorem*,

payable in gold, should be levied on the trade of each port.

With such a guarantee, it was not difficult to find capital for the construction of port works at all the principal trade outlets of the country. Port concessions were granted to companies which constructed or are constructing harbour works at the following main ports: Manáos (Amazonas), Belém (Pará), Bahia (Bahia), Victoria (Espirito Santo), Rio Grande (Rio Grande do Sul).

The great ports of Rio de Janeiro and Recife (Pernambuco) the Federal Government has kept in its own hands; and has also undertaken the harbour improvements at several other minor ports, such as Natal, Cabadello, Florianopolis, and others, where the necessary works are only now being planned.

In the following account of the works in progress, and the trade and shipping of South Brazilian ports, the ports are arranged in their geographical order from West to East, and then from North to South.

VICTORIA, the capital and chief port of the State of Espirito Santo, enjoys natural advantages of a high order. The harbour is a fine bay (2½ miles wide), entered by a narrow passage not half a mile wide. The port is the natural outlet for the trade of all the north and north-west of the State of Minas Geraes where are situated the richest mineral fields of Brazil. United to these mining districts by a railway (Victoria–Minas), the city is growing rapidly. The work of port construction was first undertaken as long ago as 1892, by a company which obtained a concession. The contract was renewed in 1904, when

the following scheme was adopted : The construction of a quay $\frac{5}{8}$ of a mile long with 28 ft. of water, and equipped with stores, electric cranes, railway lines, etc. The widening and deepening of the entrance channel, and the building of a metal bridge to connect the island of Espirito Santo, on which the city of Victoria stands, with the mainland were also included.

Some 400 steamers and 200 small sailing vessels enter and clear the port each year, the total tonnage being 550,000. The value of the yearly trade is : Imports, £330,000 ; exports, £1,000,000.

Rio de Janeiro.—The bay of Rio de Janeiro is one of the largest and safest sheltered harbours of the world. It is about 17 miles long by 15 miles wide, and has a shore line of 45 miles. The entrance is not quite a mile wide ; the bay is sheltered from the winds by high mountains, and the sea is always calm. There is abundant depth of water. The port works are the design of a commission of Brazilian engineers, and were put in hand in May, 1904. Provision was made for a quay $2\frac{1}{4}$ miles long, with a depth of 32 ft. of water. A strip of land (300 ft. wide) was reserved along the quay for the work of loading and unloading, for stores and railway lines, and for a public avenue. The plan included spacious stores ; electric cranes, both moving and fixed ; and all the conveniences for the first port of the Republic. Good progress was made with the work, which, with the purchase of existing concessions, cost £8,500,000. In his report for 1911–12, the British Consul at Rio de Janeiro notes the completion of the first portion of the new quay, but adds that complaint was being made

with the arrangements. He enumerates the following complaints—

" (1) The constant obstruction of the approach to the new quays by small boats and even by Brazilian men-of-war at anchor there.

" (2) The lack of matériel and personnel for mooring steamers alongside and for casting off again.

" (3) The excessive duration of the free limit allowed for steamers to be alongside.

" (4) The lack of proper baggage sheds for passenger steamers.

" (5) The small number of customs officials employed in checking the unloading of cargo, owing to which unnecessary delays are caused in the discharge of the steamer."

His remarks on the port conclude with the following observations—

" No decision appears yet to have been taken by the Government with regard to the original project for the extension of port works, though the quay wall is to be extended in another direction.

" The present state of the import trade of the port warrants a much larger quay space than is at present available, and if the trade of the port increases as it has done recently, the existing space will be entirely inadequate.

" As indicative of the maritime movement of the port, it may be mentioned that there are in Rio de Janeiro 835 lighters with a total tonnage of 67,802 tons, owned by 105 different firms. Some of these firms are, however, very small owners. The majority of lighters (608 in all) belong to twenty firms, and of these, the Rio de Janeiro Lighterage Company owns 172 lighters."

The figures of the shipping of Rio show some 2,500 steamers entered and cleared annually, the total tonnage being 5,750,000. The value of the trade of the port is : Imports, £18,700,000 ; exports, £8,000,000.

The docks of Rio de Janeiro are leased to an

Anglo-French company, which advertises the following charges : Port tax on all foreign goods except coal, 1s. 4d. a ton ; unloading foreign goods, 2s. a ton ; unloading Brazilian goods and loading for export, 1s. 4d. a ton.

Dock Charges. For foreign goods imported and examined in the Customs sheds—

Packages up to 500 kilogrammes : 5 reis per kilogramme ; that is, 4d. a cwt.
Packages over 500 kilogrammes : 10 reis a kilogramme.

For foreign goods imported but cleared on board—

Packages up to 500 kilogrammes (½ a ton)	3 reis a kilo
Between 500 and 1,500 kilos ..	5 ,, ,,
,, 1,500 and 3,000 ,, ..	8 ,, ,,
,, 3,000 and 5,000 ,, ..	10 ,, ,,
,, 5,000 and 20,000 ,, ..	15 ,, ,,
,, 20,000 and 50,000 ,, ..	20 ,, ,,
,, 50,000 and 100,000 ,, ..	30 ,, ,,
For foreign coal	1½ ,, ,,
,, goods exported to foreign lands ..	1½ ,, ,,
,, imports and exports of other states	1½ ,, ,,
,, manganese, iron, and monazitic sands for foreign export ..	1 ,, ,,
,, salt, sugar, and local coal, State trade	½ ,, ,,

Storage is charged at the rate of from 1 to 2 per cent. of the declared value of the goods per month, and a sliding scale after the first month.

Among other ports of the State of Rio de Janeiro, mention must be made of São João da Barra, at the mouth of the river Parahyba, 25 miles from the important city of Campos.

The chief drawback to the port is the small depth of water in the channel at the mouth of the river. It has long been proposed to make a port at the island of Lima,

in the little Bay of Gargahu. This was abandoned on the advice of Sir John Hawkshaw, who advised the deepening of the channel by the construction of breakwaters and groynes. This work, however, has not yet been put in hand.

Imbetiba.—The port of Imbetiba is situated on the bay of the same name. It is well sheltered by two hills, and has an uniform depth of from 18 to 24 ft. of water. Many years ago the local railway company was authorised to construct basins and other port improvements, but the operations have been suspended.

Cabo Frio.—A mail port, with an entrance made dangerous by frequent rocks. It gives access to the lake of Araruama, where are some important salt works, and for this reason only is the port used.

Macahe.—On the bank of the river Macahe is situated the port of the same name. The entrance is very narrow and, complicated by several reefs of rocks, is only frequented by vessels of small draught.

Angra dos Reis.—A port on the south coast of the State of Rio de Janeiro, and once a place of some importance. The bay is well sheltered, and can accommodate vessels drawing 15 ft. of water. A decree has been issued for the establishment of a Custom-house there, and several plans and schemes have been proposed for the improvement of the port. It is now proposed to build a quay and to dredge the port.

Santos.—Santos, the port of the State of São Paulo, is the best equipped port of Brazil, as it is the first in value of exports. As a port of import, it is surpassed by Rio de Janeiro, into which port a large percentage of the



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Santos: The Landing Quay

imports of the country find their way. Santos was the first Brazilian port at which works of improvement were undertaken, and they have been extended from time to time as the rapidly expanding trade of the port has rendered such extensions necessary. The port now contains 3 miles of splendid quays, which accommodate vessels of from 20 to 40 ft. draught of water. These quays are fitted with all the most modern appliances for the loading and unloading of ships. There are three lines of rails linking the port with the railway station, fine stores of great capacity, electric light, cranes, etc. A complete dredging equipment to maintain the depth of water at the quays is maintained, and nothing is ever allowed to interfere with the efficiency of all the port services.

This is very necessary, for the port is the outlet of all the productive energy of the State ; and all the coffee grown in São Paulo—and that amounts to considerably more than half the world's supply—is shipped from this one port.

The trade of the port is represented by the annual entry and clearance of 1,600 vessels, the tonnage being 3,600,000. The value of the trade of the port in 1911 was : Exports, £31,600,000 ; imports, £12,700,000.

Channel of Icapara.—The channel of Icapara gives access to the narrow lagoon known as the Bay of Cananea, in the State of São Paulo ; and so to the two ports of Iguape and Cananea. Works have long been in progress for the deepening of the channel to 10 ft. and a service of pilotage. There is now a plan for cutting a new channel through the isthmus, and so affording the two ports direct communication with the sea.

PARANAGUA is the chief port of the State of Paraná. It has a fine deep anchorage at Porto de Agua, where are a number of small wooden wharves, from which part of the maté exported by the State is shipped. The improvement of the port has been considered by a commission, which has decided that the following works shall be put in hand: The construction of a jetty 300 yd. long by 5 broad; for 250 yd. it will have a depth of 20 ft. of water. Five stores are to be built, and the equipment of railway lines, electric cranes, etc., is to be provided. The cost of the work will be £362,000.

The port is visited by 500 vessels, of a total tonnage of 500,000 each year, and the value of the annual trade is: Imports, £750,000; exports, £450,000.

On the same bay as Paranagua, but on the opposite side, is the port of Antonina. Its annual shipping list is 200 vessels, of a total tonnage of 200,000. The value of the trade is: Imports, £74,000; exports, £1,111,000.

FLORIANOPOLIS.—The State of Santa Catharina possesses several good ports, among which the capital (FLORIANOPOLIS) is numbered. It is situated on the island of S. Catharina, and the entrance to the port is by the narrow channel which separates the island from the mainland. Improvements have been set in hand, which include the dredging of the entrance channel and the construction of a quay wall. The shipping of the port is 450 vessels entered and cleared each year, of a total tonnage of 225,000. The trade of the port is valued at: Imports, £250,000; exports, £72,500.

At LAGUNAS, another port of the State, a jetty is to be built, and a guide wall constructed to deepen and

scour the channel. A channel is also to be dredged, which will connect Lagunas with Ararangua. The shipping of Lagunas amounts to 200 vessels, mostly sailing craft, of a total tonnage of 18,000. The total value of trade is: Imports, £28,750; exports, £7,000.

Dredging is also provided for the port of ITAJAHY, which is annually visited by 350 vessels, the total tonnage being 140,000. The value of the trade is: Imports, £23,500; exports, £6,000.

SÃO FRANCISCO has a yearly shipping list of 475 vessels; total tonnage, 178,000. The value of the yearly trade is: Imports, £116,000; exports, £129,000.

RIO GRANDE.—The port of Rio Grande lies just inside the entrance to the Lagoa dos Patos. This entrance has always been blocked by a bar of sand of a depth below the water that varies from day to day, so that it has never been possible to know whether a vessel of moderate draught could enter the Lagoa. As a matter of fact, vessels drawing more than 11 ft. of water were always unable to cross the bar, and vessels with that draught and less have sometimes been kept outside for two and three days at a time by the silting up and shifting of the channel.

The harbour works of the port of Rio Grande, undertaken in 1908 by a French company, are therefore, of the utmost importance to the State. The company undertook to dredge the entrance to permit the passage of vessels of 32 ft. draught, to build quays a mile long, and provide warehouses, cranes, and all the equipment of a great modern port. The company had a capital of £2,400,000.

The British Consul for Rio Grande, in his Report for 1911–12, reports that the dredging operations have not been so successful as expected ; but that the construction of two breakwaters, one on each side of the bar, is being pushed forward. It is hoped that these will concentrate the current, and so tend to scour out the channel. The importance of the channel works is intensified by the fact that this channel is also the entrance to Porto Alegre, at the other end of the Lagoa, and to the port of Pelotas as well.

The shipping of Rio Grande is 550 vessels annually, of a total tonnage of 500,000. The trade is valued at : Imports, £1,500,000 ; exports, £676,000.

PELOTAS is 35 miles from Rio Grande, on the shore of the Lagoa dos Patos. It is visited annually by about 200 vessels, of a total tonnage of 150,000 ; the trade is valued : Imports, £340,000 ; exports, £170,000.

PORTO ALEGRE is built on the river Guahyba, where it flows into the Lagoa dos Patos, at the end remote from the sea. It is visited by 450 steamers annually, of a total tonnage of 228,000 ; the trade of the port is valued : Imports, £2,120,000 ; exports, £400,000.

CHAPTER X

INLAND TRANSPORT AND COMMUNICATION

BRAZIL, as it has been possible to show in the short sketch of the history and settlement of the country, has relied in the past upon the sea for communication between the scattered towns and ports of her sea-board. The efforts the Republic is now making for industrial and productive progress has been sadly hampered by the lack of transport facilities inland. So immense is the territory of the Republic, and so remote are some of its most productive areas, that this drawback must necessarily continue to be felt for many years in the future. At the same time, remarkable strides have been made during recent years in the provision of railway lines in the more settled portions of the agricultural States. Fortunately the great forest States of the Amazon valley are provided with a network of fine, navigable rivers, which provide means of transport and communication. It is just as well that it should be so, for the nature of the Brazilian forest is prohibitive of good roads. The climate and the density of the forests make the maintenance of a road a matter of extreme difficulty. Under such influences, a well-made road seems to crumble to decay in a surprisingly short time and, if left alone, is rapidly effaced by the work of these natural agencies. For this reason, Brazil has to rely for its inland communications upon railways and rivers.

RAILWAYS.—No feature of the recent progress of Brazil has been so marked as the extension of its railway lines. At the end of the year 1911, there were 13,929 miles of line open for traffic. These railways are classified as follows—

Class.	Mileage.
Administered by the Union; *i.e.*, the Federal Government	2,090
Controlled by the Union and leased ..	4,664
Concessions with interest guaranteed ..	1,967
Concessions without guarantee	1,208
State lines and State concessions ..	4,000
	13,929

There were, in addition, 2,400 miles of line in construction, and 3,170 miles more—the construction of which had been approved. During the year 1911, 572 miles were thrown open to traffic; and in 1912, 700 miles more were opened, bringing the total mileage of Brazil up to 14,629. When it is considered that the total mileage of Brazilian railways was 9,572 miles in 1900, it will be seen that the lines have been increased by more than 50 per cent. in twelve years—a remarkable expansion.

An examination of the railways by States shows that the Southern States—Rio Grande do Sul, Rio de Janeiro, São Paulo, Minas Geraes, Paraná, Espirito Santo, and Santa Catharina—possess quite 80 per cent. of the total mileage; while the great Central and Amazonian States are practically without railway communication at all.

The following is an approximate table of the railways in South Brazil—


GOYAZ
MATTO GROSSO
MINAS GERAES
BRAZIL
SÃO PAULO
PARANÁ
SANTA CATHARINA
RIO GRANDE DO SUL
ESPIRITO SANTO
RIO DE JANEIRO
ATLANTIC OCEAN
PARAGUAY
URUGUAY
Pirapora
Theophilo Ottoni
Caravellas
Coxim
Catalão
Morada Nova
Diamantina
Corumba
Curvello
Uberaba
Bello Horizonte
Sabara
Miranda
Jupia
Ouro Preto
Victoria
Nioac
Tiradentes
Pto Tibiricá
S. Simão
Campanhas
Campos
Campos Novos
Avare
Campinas
Aldea de S. Pedro
Concepcion
Sorocaba
São Paulo
Guayra
Taxina
SANTOS
Asuncion
Ponta Grossa
Curitiba
Iguassu
Lapa
Paranagua
Villa Rica
Pto do União
São Francisco
Florianopolis
(Desterro)
Minas
Passo Fundo
Cruz Alta
Laguna
Sta Borja
Itaquy
S. Maria
Uruguayana
Porto Alegre
Monte Caseros
Caceguy
Cacapava
Lagoa dos Patos
Salto
Pelotas
Candiota
Lagoa Mirim
Sketch map of
BRAZIL.
(SOUTHERN PORTION)
showing
RAILWAYS & WATERWAYS.
RAILWAYS IN OPERATION SHOWN THUS:
RAILWAYS CONSTRUCTING & PROJECTED.
TERMINATION OF RIVER NAVIGATION.
Scale of English Miles
0 50 100 200 300 400 500

State.	Mileage.
Espirito Santo	344
Minas Geraes	3,132
Paraná	520
Rio de Janeiro	1,875
Rio Grande do Sul	1,720
Santa Catharina	417
São Paulo	3,500
	11,508

This remarkable preponderance of railways in the South is accentuated by the fact that all the capitals of South Brazil are linked together by rail. Intercommunication throughout the South is thus convenient and rapid. From Victoria, the most northerly State capital of South Brazil, to Rio Grande, the most southerly port, there is a line of railway joining up all the principal cities and ports. The journey south from Rio de Janeiro is made in the following stages : by the Central Railway of Brazil to São Paulo, and by the São Paulo–Rio Grande Railway for the remainder of the journey—

		Miles.
Rio to São Paulo (Central Railway)	..	310
São Paulo to Iterare	São Paulo to Rio Grande Railway ..	272
Iterare to Ponta Grosso		157
Ponta Grosso to l'Uruguay		401
L'Uruguay to Santa Maria		336
Santa Maria to Rio Grande		376
		1,852

The journey occupies four days.

Rio de Janeiro is also connected by the Central Railway with Bello Horizonte, the capital of Minas Geraes ; São Paulo is connected with Santos, the port of the State ;

Ponta Grosso, the railway junction of the State of Paraná, is connected with Curitybá, the capital, and with Paranagua, the port of the State ; and Santa Maria, the railway junction of the State of Rio Grande do Sul, is connected with Porto Alegre, the capital.

Five of the Southern States are further provided with a railway "net," to catch the traffic of the agricultural and pastoral areas, and convey it to port for shipment, or to the markets of the big cities for consumption.

In the State of Rio de Janeiro, the net is provided by the Central Railway, which is administered by the Union (the Federal Government) ; and by the lines administered by the Leopoldina Co. A large proportion of the latter are the property of the States of Rio de Janeiro and Minas Geraes, into which latter State the company also carries its activities.

Minas Geraes is also served by the two systems administered by the Union : the Central and the West Minas Railways. In the east, a railway to the port of Victoria (Espirito Santo) affords an outlet for the mineral products of that part of the State through its natural port. In the western triangle the railway to Goyaz connects the agricultural area there with São Paulo and Santos. But the greater part of the products of Minas Geraes find their way to Rio de Janeiro by the Central, West Minas, Leopoldina, and Sapucahy systems.

In the State of São Paulo, the systems of the Paulista, Mogyana, and Sorocabana pour the products of this fertile and productive State into the capital. They form a close and effective network through the coffee-growing districts, and push out through the hinterland of the

West to the far boundaries of the State. All the traffic they gather is carried to the port by the São Paulo railway, which has a short line from Santos to São Paulo. This line is one of the engineering triumphs of South America, where remarkable lines exist in every republic. In one stretch of about 3 miles it makes the ascent from sea-level to the elevation of nearly 2,400 ft., on which the capital city stands. This steep incline is surmounted by the aid of a cable, which draws the trains up the hill. The ascent is divided into four sections, and the whole works smoothly and admirably under the strain of the heavy traffic it is called upon to bear. The lines of the company go inland beyond São Paulo to the railway junction of Jundiahy (87 miles in all). This short line was very expensive to construct, and maintenance is provided on a liberal and thorough scale. Nevertheless, the monopoly is a most profitable one, and the company pays remarkable dividends.

As the railways that are now being constructed to "tap" the Central States of Brazil—Matto Grosso and Goyaz—are extensions of lines from São Paulo, the traffic from areas of enormous potentiality will also be conducted through the channels of this State, and the greater part of it to the port of Santos.

The Brazil Railway Co. From São Paulo southwards, the railways of the country are controlled by a gigantic corporation known as the Brazil Railway Co. This concern has acquired the control of the line from São Paulo to Rio Grande, the railways of the State of Paraná, the whole network of the State of Rio Grande do Sul, and the scattered and disjointed lines of Santa Catharina.

In this part of Southern Brazil, a great work of railway expansion is going on, the object of the Brazil Co. and the Federal Government being to provide communications for the hinterland of Paraná and Santa Catharina, and to develop a region that is as fertile and suitable for pastoral enterprise as any part of the world.

In Paraná the railway lines run only east of the São Paulo–Rio Grande line, connecting with the capital and the sea-coast. They are now being pushed west to the border of Paraguay, there to link with the trans-Paraguayan railway. Another line is being built north to the river Parapanema, where it will link with the Sorocabana system of São Paulo at Salto Grande. Both lines will "tap" country rich in forest wealth and agricultural and pastoral possibilities.

Santa Catharina has only short lines running from agricultural centres to seaports. They are to be extended so as to link with the main line from São Paulo to Rio Grande.

It may be mentioned while dealing with the enterprises of the Brazil Railway Co., that it also administers the line in Amazonas known as the Madeira–Mamore railway, built to bridge the unnavigable stretch of the river Madeira between the Bolivian frontier and the town of Santo Antonio.

A further extension of railway activity in the South is the extension of established lines into Central Brazil, so that the vast tracts of Matto Grosso and Goyaz may be provided with outlets for their products from the ports of the States of São Paulo and Paraná. Thus an extension of the Mogyana line crosses the boundary of São



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Second-class Passenger Car

Paulo and the triangle of Minas Geraes to pass eventually to the central capital of Goyaz, a State that has not yet felt the stimulus of a railway. This isolated town will presently be put in communication with the city of São Paulo and so with the port of Santos. This central line will pass through the most fertile territory of Brazil—plains where there is illimitable grazing—and hilly country most suitable for agriculture. It is expected that a great revival of pastoral and agricultural activity will follow the railway into Goyaz.

What the Goyaz line is about to do for that State, the North-Western Brazilian Railway will attempt for the State of Matto Grosso. This line, which is planned to join the town of Bauru—in São Paulo—to Corumba, the commercial emporium of the State of Matto Grosso, has already been a long time in the course of construction. The delay is due to the swampy nature of the ground in the neighbourhood of Corumba, which has rendered the task of laying down the lines exceptionally difficult. Eventually the line is to be prolonged through Corumba, in a north-westerly direction, until it links up the Madeira-Mamore railway with the Eastern coast, and establishes an unbroken chain of railway lines through the heart of Brazil to the Amazonian States.

All these large projects have the approval and co-operation of Parliament.

In order to understand how these extensions are being made and how the existing lines have come into being, it will be convenient to refer to the classification of the Brazilian railways which heads this chapter. It will be noticed that some lines are administered by the Union ;

others are controlled by the Union and administered by corporations; others have been built by corporations, with guarantee of interest by the Union; others have been built by corporations without guarantee of interest, but in return for some land concession or similar inducement; while a fifth class consists of lines controlled by the States and built under State auspices.

It is now a maxim of Brazilian finance that the most economical and convenient method of providing new railways is for the Federal Government to build them, and lease them to corporations. Indeed, the Federal Government, finding the payment of guaranteed interest irksome and uneconomical, in the year 1910 purchased a number of lines by the issue of recision bonds to the amount of £16,600,000 in all, and leased the lines so purchased. But financial considerations do not permit the Union to construct all the lines that are needed, and both methods of railway construction are still in vogue in Brazil.

The terms of the leases are interesting, since the rent payable is arranged on a sliding scale of percentage on the gross receipts of the line. One of the simplest leases is that of the Paraná railways, which exacts a rent of £166,666 annually, and in addition, 20 per cent. of all gross receipts above £800,000. The profit on the working of these lines was £266,000 in 1911, when the gross receipts were £400,000. This, however, is the most profitable of the leased lines, for the lessees have paid the Union over £1,000,000 in rental for it up to the end of 1911. In the same period the railways of Rio Grande do Sul have paid £328,000, and the line

from Rio to Minas has paid £170,000. Much smaller sums have been yielded by the leased railways of North Brazil.

Of the railways administered by the Union, the more important is the Central of Brazil, and its financial results are certainly disappointing. Its 1,200 odd miles of line earned £2,160,000 in 1911, and the expenses reached the high figure of £3,000,000. Some explanation of this financial failure may be found in the fact that 8 per cent. of the passengers, and 20 per cent. of the freight carried, paid nothing at all. M. Paul Walle, in writing of the loss on the working of the system, supplies another reason in the fact that the number of employees totals seven to the kilometre ($\frac{5}{8}$ths of a mile); whereas, on the Leopoldina system, run by private enterprise in the same region, only one employee is needed to the kilometre. In other words, political considerations affect the administration of the line.

The other line administered by the Union is the West Minas, which shows much better results. The receipts from its 870 miles of line were £221,000 in 1911, and the expenses only £161,000 leaving a profit of over £60,000.

The results of working the railways administered by the Union have already been given. The following are the figures of the principal lines in South Brazil administered by corporations.

Leopoldina (1912)—	
Gross receipts	£1,688,926
Working expenses	1,086,657
Net receipt	£602,269

South Minas (1911)—

Receipts	£272,446
Expenses	249,870
Net receipt	£22,576

São Paulo (1911)—

Receipts	£1,961,688
Expenses	1,208,200
Net receipts	£753,488

Goyaz (1911)—

Receipts	£10,700
Expenses	25,200
Deficit	£14,500

Paulista (1911)—

Receipts	£721,659
Expenses	375,656
Net receipts	£346,003

Mogyana (1911)—

Receipts	£154,342
Expenses	123,900
Net receipts	£30,442

Brazil Railway Co.'s Lines (1911)—

Net of Rio Grande	Net receipt	£298,490
Paraná	,,	266,930
Sorocabana ..	,,	5,188
São Paulo-Rio Grande	Deficit	14,540
Thereza-Christina	,,	8,400
North Western ..	Receipts	£57,860
,, ,, ..	Expenses	76,226
	Deficit	£18,336

The first-class passenger fares in South Brazil (single fare) are as follows—

	Per Mile.
São Paulo Railway	1¾d.
N.W. of Brazil	2d.
Mogyana	2d.
Sorocabana	2d.
Great Western Railway	1¾d.
Victoria Diamantina	3d.
West Minas	2½d.
Paulista	2d.
São Paulo-Rio Grande	2¾d.
Paraná	2½d.
Rio Grande do Sul ..	From 2d. to 3d.

The limits of railway construction have to some extent been defined in Brazil by the range of navigable rivers. It has been the design of those who planned the railways to make use of the waterway, so as to supplement the value of communication by rail. Thus some of the railway companies have a fleet of steamers plying on rivers that are situated within the scope of their operation, and the river services co-ordinate with those of the railway lines.

WATERWAYS.—The navigable rivers in South Brazil are neither so large nor so suitable for traffic as those in the north and centre of the Republic. Nor has such use been made of them, since the more expeditious method of railway transit is available in so many localities. To quote M. Pierre Denis, a river is only regarded as navigable as long as it constitutes the safest and least costly route.

The rivers regularly navigated in South Brazil are: Minas Geraes—the Rio Grande and the São Francisco; Rio de Janeiro—Parahyba; São Paulo—the Tieté, the Piracicaba, and the Iguape; Paraná—the Iguassu and the Negro; Santa Catharina—Iguassu, the Negro, and

the Itajahy; Rio Grande do Sul—the Uruguay, the Ibicuhy, the dos Sinos, the Taquary, the Cahy, the Guahyba, and the Gravatahy.

The river *São Francisco* is navigable in its upper reaches from Joazeiro, in the State of Bahia, to Pirapora in Minas Geraes; and is navigated by the steamers owned and administered by the State of Bahia. There are twelve of these boats, and a great effort is made to preserve a regular service up to Pirapora. The sections near Pirapora are apt to suffer in a dry season, but the service on the whole is a good one. An annual subvention from the Union Government of £10,000 a year is contingent on two trips a month being made from Joazeiro to Pirapora. There are also services on some of the larger tributaries of the river.

The navigation of the *Rio Grande* is part of the service of the West Minas railway, which has four steamers plying over 140 miles of the course of the river between Ribeirão Vermelho and Capatinga.

In the State of Rio de Janeiro the river *Parahyba* is navigable from its mouth as far inland as Campos, about 60 miles. The small steamers of the São João de Barra and Campos Co. ply over this distance between the two cities named.

In São Paulo a stretch of 60 miles on the *Tieté*, and another of 80 miles on the *Piracicaba*, are navigated by the small steamers of the Sorocabana railway system. The river *Iguape* is navigable for 200 miles from its mouth, and there are three lines of steamers running on it: from Iguape to Xiririca, from Iguape to Santo Antonio and from Iguape to Sabatina.



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Candelaria Wharf, on the Madeira River

In Paraná, two sections of the *Iguassu*, and a part of its tributary—the *Negro*—are navigated by small steamers.

This service is also used by the State of Santa Catharina, which has, in addition, a service of small boats on the river *Itajahy*, from its mouth to the city of Blumenau, a distance of under 60 miles. They are controlled by the Itajahy–Blumenau River Co.

In Rio Grande do Sul, a company with two steamers provides for the navigation of the *Uruguay* and the *Ibicuy* as far as Santo Isidro. It receives an annual subsidy of £4,000. Another concern maintains a service on the Uruguay between Argentina ports and the Brazilian towns of Uruguayana, Itaquay, and São Borja.

From Porto Alegre, the State capital, river steamers ply on the river *Guahyba*, on which the city is built, and on the four rivers which unite to form the *Guahyba*, the *Jacuhy*, the *Cahy*, the *Sinos*, and the *Gravatahy*. These boats are frequent, convenient, and well managed.

ROADS.—The roads of Brazil are not good, though the passion for motoring, which has recently attacked the Brazilians, has been the cause of very sensible improvements in the vicinity of some of the larger cities.

The best roads in Brazil are found, as a rule, in the neighbourhood of colonies, and the best of all exist in the State of Paraná. Some of these traverse the maté country, and are decently kept and mended. But a good road in Brazil is a rare occurrence.

The large cities are well served by systems of electric tramway cars, of which the inhabitants take full advantage. Rio de Janeiro, São Paulo, Porto Alegre, and

Bello Horizonte are proud of their trams, and with good reason. These services are expeditious, frequent, and cheap ; and they are practically continuous through at least twenty of the twenty-four hours.

There are several systems plying in the city of Rio de Janeiro, but the largest and best is that of the Light & Power Co. A company with a similar title supplies São Paulo with light and tramway service. At the time of writing, Curitybá, the capital of Paraná, is witnessing the substitution of electric lines for vehicles drawn by horses and mules. Florianopolis, the capital of Santa Catharina, is the only Southern capital lacking in this respect.

But it is not only the State capitals that are so equipped. Santos, as the port of São Paulo, has a tram service equal in proportion to that of the capital ; and there are many of the centres of population, both in São Paulo and in Minas Geraes, that can boast the same convenience. In most of these places the power is supplied by a neighbouring waterfall, the energy of which has been utilised by the municipality for providing light traction and power for the needs of the community.

CHAPTER XI

AGRICULTURE

BRAZIL is one of the few great countries of the world that possesses a Minister of Agriculture. The creation of this Ministry in 1909 was due to a recognition of the great disadvantage to the Republic arising from the tendency in each State to specialise—a tendency which ended in over-production. Each State was growing its own special product for foreign markets; while commodities for home consumption that might very well have been grown on the spot, had to be imported, their price being increased enormously by cost of carriage and handling, as well as by heavy duties.

This state of affairs was the logical outcome of two momentous events in the history of Brazil. The first was the liberation of the slaves; and the second, which followed closely upon the first, was the proclamation of the Republic. As a result of the freedom granted to the slaves, agricultural labour became scarce and expensive. The effect of the change to Republican Government was the imposition of export duties by the new State governments upon all products grown for export. The agriculturists, confronted with dear labour, transport difficulties, and heavy export duties, found the only way to prosperity in specialising in some product which might show a heavy profit.

Thus coffee and rubber were made to pay for all, and Brazil imported freely and recklessly from her

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neighbours the food-stuffs she might so easily have grown herself.

The State of São Paulo was the first to awaken to the folly and waste of this system of monoculture, the lesson being learned from the coffee crisis. This was brought about by over-production and the inevitable drop in price in the world's market. The loss then endured was accentuated by the high price of all imported commodities; and São Paulo appointed a State Minister of Agriculture to encourage the home growth of all the necessaries of life, and to provide the State with other articles of export beside the ubiquitous coffee. The experiment answered so well in São Paulo, that it was followed by the National Government, and the department is now one of the most important in the Brazilian Cabinet.

Of the eight main items in Brazil's export trade, five are the product of the agricultural industry, and may be arranged in the following order—

Product.	Total Brazilian Production. Tons.	South Brazil's Production. Tons.
Coffee	.. 600,000	580,000
Cocoa	.. 31,000	—
Cotton	.. 17,000 (export only)	—
Tobacco	.. 24,705 (export only)	10,000 (locally consumed)
Sugar	.. 350,000	100,000

The importance of these figures will better be grasped when it is stated that Brazil produces 80 per cent. of the world's supply of coffee; that she disputes with Ecuador the first position as the world's cocoa supplier; that there is no limit to the cotton lands of the country, and

that, in addition to the export of raw cotton, there is an important and growing home industry in the spinning and weaving of cotton fabrics ; that the sugar fields produce beyond the quantity exported—all the sugar consumed by 25,000,000 people—estimated at 300,000 tons a year ; that all the tobacco locally used (and the total is a very large one) is locally grown ; and that in the case of most of these commodities, bad and wasteful methods of farming and production are almost universal.

But the fertile fields of Brazil still fail to produce in sufficient quantities all the staples of life : the beans, rice, wheat, lard, bacon, butter, and other articles of food that are of everyday consumption. Large quantities of these have to be imported, though the quantities are diminishing year by year. There is good reason, indeed, to suppose that Brazil is on the verge of becoming a self-supporting nation, and will eventually become a provider of these commodities instead of being a consumer.

The Southern States of Brazil are at present the agricultural States ; a fact due to the more temperate climate, the more regular rainfall, and the more industrious habits of the people. These predisposing facts are accentuated by the advantages Southern Brazil enjoys, as compared with the North in the matter of transport facilities and population.

Coffee.—The State of São Paulo annually produces nearly 70 per cent. of the world's coffee supply, the other coffee States being Minas Geraes, Rio de Janeiro, Espirito Santo, and Bahia. In these States exists the

famous *terra roxa*, a red soil specially adapted to the growth of the coffee tree. This soil is at its best when in a virgin condition, immediately after being denuded of the forest growth, but after some years it becomes impoverished. When that occurs, the Brazilian custom was to abandon it, when it quickly reverted to its primal state of wildness.

The trees are grown from seed in nurseries, and are transplanted to the *cafezal*, when they have become strong and hardy enough. It is the custom in São Paulo to cultivate the soil between the rows of young trees with such cereals as maize and beans, the growth shading the young coffee plants from the hot sun. For three years the young trees require a great deal of attention, and in the fourth year bear their first crop of berries. For the next ten years the crops from each tree continue to increase year by year, and then reach their maximum yield, which is maintained for three or four years, after which the yield begins to decline.

The harvest begins in September, and the ripe berries are subjected to the various processes of drying, pulping, polishing, and grading at special establishments maintained for the purposes. They are finally bagged in sacks, holding 132 lb. each, for export.

The price of coffee is regulated by the State of São Paulo, which buys from the producer when the price is low, and unloads its stock on the world's market when the price is suitable. It remains to be seen whether Brazil will be able to control the price of this article of universal consumption, but large fortunes have certainly been made in the State of São Paulo in the past. The



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Coffee for Shipment, Santos

following figures represent the production of coffee in South Brazil in 1911—

State.	Quantity in tons.
Espirito Santo	947
Rio de Janeiro	44,643
Minas Geraes	102,679
São Paulo	426,212

CEREALS.—In Brazil the staple foods of the masses are dried beef, salt fish, beans, mandioca, flour, rice, maize-meal, and, latterly, wheaten bread. In spite of the fertility of its soil and adaptability for agricultural and pastoral development, Brazil has always imported a proportion of these commodities, although the proportion has shown a very great diminution during recent years.

Beans. The *feija* or *black* bean is the principal component of the stew of dried beef, beans, mandioca, and lard, which is the staple dish of the labouring classes. These beans will grow luxuriantly in any part of Brazil where they are cultivated, but do best in the Southern States and the elevated plateaus further north. Rio Grande do Sul is the greatest producer of them at present, though in Minas, São Paulo, and, indeed, everywhere south of Rio, they do well. They can be grown with the coffee crop and also between the cocoa trees. The consumption is still 20,000,000 lb. a year in excess of the production, and that quantity has to be imported.

The following was the production of beans in South Brazil in 1911—

State.	
Rio de Janeiro	4,431 tons
Minas Geraes	24,784 ,,
Santa Catharina	1,891 ,,
São Paulo	3,418,000 bushels

Rice is another staple food of the Brazilian labourer, and until recent years a great quantity was imported from India. In order to encourage the local growth of rice, the Government placed an import duty upon the grain, and this had the stimulating effect hoped and anticipated. Within ten years the importations, then standing annually at the figure of 20,000,000 lb., disappeared to a vanishing point, and Brazil is likely within a few years to have rice for export.

The up-to-date methods of rice cultivation are in evidence at the great rice farm owned by Mr. Pedro Osorio, not far from Pelotas, in the State of Rio Grande do Sul. Here are a thousand hectares under rice, the whole consisting of a flat plain, through which flows the river Pelotas. Two powerful pumps lift the water of this river and distribute it by iron pipes and a wooden aqueduct to the irrigation channels. The whole estate is an object lesson in organisation, and is studied by others who are devoting their energies to rice-growing. In one municipality in the same State, and not far from the estate mentioned, the progress in rice culture is shown by the following figures—

1906—One rice farm	producing	5,200	sacks
1907—Two rice farms	,,	11,000	,,
1908—Eleven ,,	,,	51,060	,,
1909—Sixteen ,,	,,	73,300	,,
1910—Twenty-seven ,,	,,	112,550	,,
1911—Thirty-one ,,	,,	213,110	,,
1912—Sixty-seven ,,	,,	400,000	,,

Rice grows freely everywhere in the low-lying coastal strip of South Brazil and in the river beds of Minas as well. South Brazil's product of rice in 1911 was—

Rio de Janeiro	1,174	tons
Santa Catharina	1,514	,,
Rio Grande do Sul ..	12,000	,,
Minas Geraes	296,000	bushels
São Paulo	2,625,000	,,

Wheat. The growth of the large cities and the advance of the manufacturing industry has resulted in a demand for white bread of wheaten meal by a class which was formerly content with bread of mandioca flour. Wheat was formerly grown in the three most southerly States, but the culture was abandoned because of the prevalence of a kind of rust. As a consequence, Brazil still has to import great stocks of wheat from the Argentine, although the wheat lands of Brazil are equal to any in that country. To encourage the growing of wheat, the Department of Agriculture offered bonuses of £1,000 each to any agriculturist who grew a crop of wheat covering 200 hectares. Information as to the best treatment of the rust and the preparation of the seed to render it immune was disseminated, and active steps taken to provide farmers with the best seed wheat.

The history of wheat growing in Rio Grande do Sul since that time is interesting. In 1909 the wheat yield of the State was 14,000 tons and the local consumption 19,000 tons. In 1910 the yield was 30,000 tons, and there were two legitimate claimants for the £1,000 bonus. In 1911 the yield has risen to 47,500 tons, and seven farmers drew the £1,000 reward. The yield for 1912 was estimated in advance at 60,000 tons, and the amount of ground prepared for wheat in 1913 showed that the revival of wheat growing in Rio do Sul has become a triumph for the agricultural Department. There is also

a renewal of wheat growing in Paraná; and the new railways, being built in that State and in Santa Catharina, will link up some of the finest wheat land of America with the ports of export.

Maize. Maize is grown everywhere in Brazil, both for the corn and as a fodder plant. As food for human beings, it is rather heating for the Brazilian climate; but much of it is used to feed the pigs and poultry in the farming States of Minas and São Paulo. The latter State exports some 500,000,000 lb. a year, or more than half the maize exported from Brazil. The other maize-producing States are Minas, Rio Grande do Sul, Santa Catharina, etc.

The maize produced in South Brazil in 1911 was—

Rio de Janeiro ..	..	35,000 tons
Minas Geraes ..	..	31,000 ,,
São Paulo.. ..	..	23,390,000 bushels

Sugar.—Although the Northern States of Brazil produce more sugar than those of the South, the growth of sugar-cane is nevertheless of considerable value to some of the States of the South. Up to the present, the local market has always been the chief concern of the sugar-grower, only a small surplus remaining for export. The local consumption is very high, and it is estimated that 300,000 tons have to be produced before there is any margin for export.

The chief drawback to the progress of the sugar-producing industry is the lack of modern methods among the growers and of modern equipment among the sugar millers. The sugar-cane is propagated by three methods in Brazil: either from seed, from the shoots of the cane,

or from pieces of the cane itself. The plants grown from seed take longest to mature, a period of sixteen months being necessary for the cane to ripen. Ten months after cutting a fresh crop of cane may be taken from the old roots. The question of varieties of sugar-cane has been closely studied by the Department of Agriculture, and a number of standard varieties has been selected and recommended to the planters.

In many cases, the cane is crushed at mills of modern design and furnished with the latest equipment of machinery. These mills are far outnumbered, however, by mills of antiquated equipment, where the cane undergoes only the most primitive treatment. In such places only about 5 per cent. of sugar is extracted from the cane, though its sugar contents average at about 14 per cent. This wasteful method of milling undoubtedly has retarded the progress of cane-growing in Brazil.

In addition to the sugar, the raw spirit is extracted, and under the name of alcohol is a regular article of commerce. South Brazil produced, in 1911, sugar as follows—

Rio de Janeiro. 36,000 tons; spirit, 2,000,000 galls.

Minas Geraes. Sugar, 2,000 tons.

São Paulo. Sugar, 24,000 tons; cane spirit, 24,000,000 galls.

Tobacco, like sugar, is more generally grown in the tropical States of the North than in the Southern States. The latter, however, produce a good article for local consumption, and this is very heavy—most Brazilian women, as well as men, indulging in the use of tobacco.

Up to the present time it has not been possible to induce the planters to take the necessary care in the

growth, gathering, and drying of the tobacco leaves. The product is, therefore, unequal in quality, or presents a bad appearance when prepared for market. These drawbacks have prevented the building up of a large export trade in tobacco, though Bahia—one of the Northern States—has attained a very considerable export. As already stated, the Southern States content themselves with growing for Brazilian consumption. The quantities in 1911 were—

Rio de Janeiro	800 tons
Minas Geraes	5,000 ,,
São Paulo	2,000 ,,
Rio Grande do Sul—Tobacco worth	£150,000

Cotton is another of the products of the tropical zone, which is also found in South Brazil, although growing more freely in the North. São Paulo produces 20,000 tons every year, all of which goes to the local mills, for the textile industry is now a very considerable one, fostered as it has been by a heavy protective tariff. There are two species of cotton plant cultivated indifferently by the Brazil planters—the bush cotton and the tree cotton. The latter is more plentiful in the North, but the bulk of the southern cotton is that grown on bushes. A very considerable trade is also done in the cotton seed, from which a valuable commercial oil is expressed.

The Banana.—The coastal strip of South Brazil is capable of producing many valuable fruits, and has already been proved able to grow bananas of fine quality. The best banana plantations are those in the State of Santa Catharina, and that State annually exports about

a million bunches. A bunch contains some 150 to 200 bananas, and the current price for such a bunch in Santa Catharina is from 8d. to a 1s. There is no great demand in Brazil for the fruit, but the neighbouring Republics of Argentina and Uruguay are good customers.

The variety most favoured is the golden banana, but all kinds—from the large plantain to the small sugar banana—do equally well in this part of Brazil. The banana is an easy fruit to cultivate; and, low as the price obtained for a bunch undoubtedly is, it represents a good profit to the planter of Santa Catharina. The whole trouble in this case is not to encourage the growth, but to create a market locally which would afford the planters further scope.

The Olive.—The introduction of the olive into Brazil appears likely to be the foundation of another lucrative industry in that country. Olive oil and olives, worth over half a million sterling, are annually imported by Brazil, although the import duty is comparatively a heavy one. The first olive trees were planted by the Italian immigrants at such places in Rio Grande do Sul as Alfredo Chaves. These trees, planted more as a matter of sentiment, grew with amazing vigour, and yielded crops out of all proportion to those borne by similar trees in a less favoured climate. So remarkable was the yield of these first olive trees, that a society was at once formed for the importation of trees of the best stocks from Italy. In this plan the Government took an interest, and arrangements were made for the importation of 50,000 fine young olive trees for the State of Rio Grande do Sul. When the trees are firmly

established and growing, the Government undertakes to pay a bonus of 2s. 8d. a tree as an encouragement to the new industry. Should this experiment succeed, the example of Rio Grande do Sul will probably be followed by other States of South Brazil.

FARMING.—During the course of the present century great strides have been made by the Southern States of Brazil in mixed farming and small stock-keeping. The States of Minas Geraes and São Paulo have immense numbers of pigs and poultry, as also has Rio Grande do Sul; and the keeping of this small stock is an outcome of the growing of maize and other food-stuff.

In the far South, and especially in Rio Grande do Sul, the fruits of temperate climates have been introduced, and are grown with success; vegetables, too, are grown in abundance, especially by the thrifty colonists, who live near the cities of Paraná and Rio Grande do Sul. Many of these are Germans, and their colonies are veritable little garden cities.

The work of the Department of Agriculture in encouraging mixed farming is practical and thorough. Two schools of Agriculture have been established: one at Pinheiro, in the State of Rio de Janeiro, and the other in Bahia; and in these establishments the pupils are instructed in the theory and practice of up-to-date farming in all its branches. A band of travelling professors has been organised, and these gentlemen travel round the country giving lectures and demonstrations in farming. Eight apprentice schools for farming have been instituted, at which the young lads can be taught to farm properly by practical work in the tilling of the soil.



Timber Yard and Farm at Blumenau, Santa Catharina

Many of the Southern States have their own agronomical institutions, where the various soils of the State are tested and analysed, so that they may be applied to the best advantage. The department has further set aside fields of demonstration, where all the agricultural products of the climate may be seen growing and the methods of tending them may be inspected by the agriculturists who visit them. For the same purpose, the travelling exhibitions of agricultural machinery have been organised, so that the "locals," seeing the modern apparatus at work and the saving of labour and time it means, may be inspired to adopt better methods than the primitive ones, which, until recently, characterised Brazilian agriculture. Reference has already been made to the bonuses paid for wheat growing and the gratifying result that has followed the measures taken.

The aim of the Department of Agriculture is, in short, first to make Brazil a self-supporting country, and then to convert her into one of the world's food producers—like their near neighbour, the Argentine Republic. With the fertile soil and genial climate of Southern Brazil, and the vast stretches of virgin soil awaiting the agriculturist, this is an easy possibility. When it has been achieved, the thoughtful men of Brazil will be relieved of the nightmare which has oppressed them ever since they awakened to the dangers of the over-cultivation of coffee and the weakening of rubber prices—ever present menaces to the two articles of commerce which at present form 75 per cent. of the exports of Brazil.

CHAPTER XII

AGRICULTURAL COLONIES AND RATES OF WAGES

IMMIGRATION.—Brazil has always encouraged immigration and colonisation, with the result that since the year 1820 a total net gain to the population of 3,000,000 has been derived from this source. At the present time, there is a steady influx of some 125,000 persons each year, of whom 100,000 are of Portuguese, Spanish and Italian nationality. The laws for the reception and disposal of immigrants are conceived in a liberal and far-seeing spirit, especially those regulating the treatment of immigrants who may wish to join one of the many agricultural colonies which have been planted in the Southern States of Brazil.

Genuine immigrants, who arrive with families of not less than three children, between the ages of twelve and fifty years, are reimbursed the cost of their third-class passages to Brazil, and are exempt from all import duty upon their possessions. The definition of an immigrant is sufficiently broad, since it covers all persons under the age of sixty who arrive in Brazil by second or third class from foreign countries and are not suffering from any contagious disease, are not criminals, beggars or vagabonds, practising some illegal calling, and are not insane or permanent invalids.

Interpreters are sent to every boat arriving with immigrants at the principal ports, and from these officials information of every kind may be obtained.

Should the new-comer wish it, the Government establishment for the reception of immigrants is at his disposal free of charge for some days; and for the indisposed, free medical advice is provided as well. The bureau of information maintained for the service of the new-comers will find employment, and pay their passage by boat or rail to any place selected for them by the officials. The immigrant may select his own locality, but in that case must pay his own fare.

Encouragement is naturally given to immigrants who wish, with their families, to attach themselves to one of the colonies, which are agricultural and stock-raising centres. For these, free passage and free maintenance is provided until they are established upon the plot of land they select to cultivate. They are further provided with provisions for six months, until their first crop provides them with food of their own growing; and, in payment, the head of the family must do fifteen days' work each month upon the public work of the colony, which are usually extensions of the existing roads.

The colonies are divided into four classes: those established by the Federal Government; those established by the State Government, with the support of the Federal Government; those established by such bodies as railway companies, which have acquired land as part of their premium for railway construction; and those founded by other companies or by private persons. Whatever category a colony may belong to, all are under rules imposed by the Federal Government.

The land is divided into rural and urban lots. The size of the rural lots is 60 acres, when the land is quite

near a railway or a navigable river, or 120 acres when this is not the case. The size of the urban lot is about 1¼ ac. The price of the rural lot is from 5s. to 10s. an acre, for the colonist accompanied by his family, and not able to pay ready money. It is cheaper for the colonists who has already paid off the price of one lot, and wishes to acquire another in the neighbourhood. For the colonist without family, the price per acre is from 8s. to 15s., or 50 per cent. dearer than the man with a family.

The price of the urban lots varies considerably, and may be set down as from £40 to £100 per acre, according to situation, proximity of railway station, navigable river, or other advantages. Payment for these lots is made in a series of instalments, spread over a number of years. No payment is required for the first year, and a liberal discount is returned to the colonist who anticipates the payment of his indebtedness.

In the case of the death of the colonist, his rights under the law are conserved for his wife and family, and every protection is granted against creditors to that part of the plot on which the house stands, known as the homestead. The conditions of payment vary in detail, but the principle is everywhere identical with that outlined, which applies in the Federal colonies.

Other conditions imposed by law upon the colonies are : A convenient and healthy height above sea-level, a soil suitable to stock-rearing and mixed farming, ample supply of water for all purposes, and provisions of sites suitable for manufacturing industries. Every colony must possess : One or more schools for primary education ;

an experimental farm where the products of the district may be shown in the course of cultivation; shops for wood and ironwork, where the sons of colonists may earn useful trades.

In many colonies the Government maintains stud animals for the improvement of the strains kept by the colonists, instruments of agriculture for the common use, machines for the cleaning of the primary products, and scientific apparatus for the use of agriculturists.

COLONIES.—The following is a list of the principal colonies established at present in Brazil—

Santa Catharina. Federal Colonies: Annitapolis and Esteves Junior. Private Colonies: Nova Galicia.

Rio Grande do Sul. State and Federal Colonies: Guarany, Ijuhy, and Erechim.

Minas Geraes. Federal Colonies: João Pinheiro and Inconfidentes. State and Federal Colonies: Constança, Vargem Grande, Santa Maria, and Barão de Ayuruoca. State Colonies only: Itajuba, Rodrigo de Silva, Nova Baden, and Francisco Salles. Private Colonies: Carlos Prates, Affonso Penna, Americo Werneck, Bias Fortes, and Adalberto Ferraz.

Rio de Janeiro. Federal Colonies: Visconde de Maua and Itatiaya.

Espirito Santo. Federal Colonies: Affonso Penna.

São Paulo. Federal Colonies: Bandeirantes and Monção. State and Federal Colonies: Nova Europa, Gavião Peixoto, Nova Odessa, Jorge Tibiriça, Campos Salles, and Parequira Assú.

Paraná. Federal Colonies: Ivahy, Tayo, Iraty,

Itapara, Senador Correia, Vera Guarany, Affonso Penna, Jesuino Marcones, and Cruz Machado.

Some idea of the extent and production of one of these colonies may be gained from the details supplied in the official publication on the subject. Taking at hazard the record of the colony of Rodrigo de Silva, in the State of Minas Geraes, the following particulars are supplied—

Rodrigo de Silva is 9 miles from the town and railway station of Barbacena on the Central Railway of Brazil, and 240 miles from Rio de Janeiro. It consists of 334 allotments, of which 256 are occupied, maintaining a population of 1,000 Italians and 400 other colonists of French, Portuguese, and German nationality.

The annual produce is valued at £20,000, and consists mainly of maize, potatoes, and wine, with smaller quantities of rice, beans, honey, and fruit. Large plantations of young fruit trees have been made; also mulberry trees, for the silk industry in the colony which is an extensive and promising one. A modern factory for the spinning of silk has been established on the spot, and the little colony maintains a paper entitled *Sericulture*, which supplies all information on this important industry. The factory has already an important daily output of spun silk, and is extending its operations. The colony has also an ice factory, the ice being required for the packing of silkworm eggs for the winter.

A stock farm, with stallions of the best breed, stud sheep and bulls, as well as other stock, is maintained for the improvement of the live stock of the colony. The place has a saw mill, where sawn timber for building purposes can be had at moderate prices; there are two schools, and a good market for perishable produce is found in the neighbouring town of Barbacena.

This is a sample colony, taken at hazard from the many existing in Southern Brazil. Some are larger and more important; others have not yet reached so

advanced a stage of development. But all are governed by the same wise and progressive laws of the Federal Government.

It should be clearly understood that the list given relates only to colonies in the stage of development. There are scattered all over Southern Brazil communities of agriculturists who own their own land and are prospering apace, having emerged from the colony stage, and having become a self-supporting community. Over a hundred such communities exist in the State of Paraná alone.

The feature of immigration in Brazil is the rural tendencies of the immigrants. Labour is still dear in the large cities, in spite of the entrance of over 100,000 new-comers every year; for the greater part of them either go to the colonies, or to labour in the fields and plantations. In the plantations they are paid according to a system of results. The man has a house free of rent for himself and his family; and a plot of ground where he can grow the beans, maize, and other food, such as mandioca, that the family requires. He has to attend to a certain number of coffee bushes, and, in return, is paid so much a hundred per year. When the coffee picking comes round, he is paid for picking the berries according to the quantity picked. This system of employing labour gives the man a good chance to cultivate his own plot, and encourages him to extend his personal interest to the productions of his employer.

In the cities, labour is well paid, as is necessary when the high rents and cost of living are considered.

The following information, issued by the Ministry of Agriculture shows the situation of the Agricultural Colonies founded by the Nation—

Name of Colony.	Area in Hectares (*)	Altitude.	Temperature (1)	Situation.	Principal Crops.	Leading Nationalities.
Affonso Penna	54.354 00	Metres. 160	24°5	*State of Espirito Santo*, valley of the Rio Grandu, tributary of the right bank of the Rio Doce, 7½ miles from Guandu (kilom. 212 of the Victoria-Diamantina Railway).	Maize, beans, coffee, sugar-cane, rice, manioc, potatoes, cotton.	Italians, Germans, Spaniards, French, Portuguese, Brazilians.
Visconde de Maua	11.058 00	1.050 00	18°5	*States of Rio de Janeiro and Minas Geraes.*—This colony occupies lands in the Rio Preto valley in the municipality of Rezende (State of Rio de Janeiro) and Aguruoca (State of Minas), at 19 miles from Rezende station on the Central Brazil Railway.	Cereals in general, fruits (especially apples, pears and grapes).	Swiss, Germans, Austrians, Portuguese, and Brazilians.
Itatiaya	8.735 00	823 00	18°5	*State of Rio de Janeiro, municipality of Rezende.*—The chief town of the colony is connected by a road 5¾ miles in length with Campo Bello station, on the Central Brazil Railway.	Beans, maize, potatoes and cereals in general. Good crops of apples, pears and grapes.	Portuguese, French, Germans, and Brazilians.
Inconfidentes	5.082 00	739 40	19°	*State of Minas Geraes, Municipality of Ouro Fino*, near the town of that name, 5¾ miles from Ouro Fino station on the South of Minas Railway.	Maize, beans, rice, coffee and cereals in general.	Germans, Italians, Russians, Portuguese, and Brazilians.
João Pinheiro	9.171 80	692 09	22°7	*State of Minas Geraes, Municipality of Sete Lagoas.*—The chief town of colony is connected by an excellent carriage road, just over 11 miles in length, with Silva Xavier station, on the Central of Brazil Railway.	Maize, rice, beans, cotton, potatoes, sweet potatoes, manioc, coffee, sugar-cane, vegetables, vine, figs, etc.	Germans, Austrians, Dutch, Italians, Russians, Spaniards, Brazilians.
Bandeirantes	14.104 30	510 90	21°	*State of S. Paulo, Municipality of S. Jose do Barreiro.*—The colony extends from the Rezende-Bocaina Railway to the top of the Serraçda Bocaina, in the Mambucaba valley.	Maize, beans, coffee, rice, manioc, ground-nuts, sweet potatoes, tobacco, vegetables and bananas.	Germans, Portuguese, Austrians, and Brazilians.
Monção	28.873 65	626 00	20°	*State of S. Paulo, Municipality of Lenções*, in the Agudos district, 13 miles from Gerqueira Cezar station, on the Sorocabana Railway.	Maize, beans, coffee, manioc, sugar-cane, vegetables, etc.	Germans, French, Italians, Spaniards, Brazilians.
Cruz Machado	73.000 00	1.100 00	19°	*State of Paranà, Municipality of Guarapuava*, between the Areia and Palmital rivers, tributaries of the right bank of the River Iguassu. The colony is thirty miles from Maréchal Mallet station on the S. Paulo-Rio Grande Railway.	Maize, beans, vineyards, rye, sugar-cane, wheat, manioc, potatoes and vegetables.	Poles, Austrians, Russian-Poles, and Brazilians.



Polish Colony on the River Iguassu, Paraná

Senador Correa .	11.625 00	650 00	19°	*State of Paraná, Municipality of Prudentopolis.*—The colony is situated on the right bank of the River Bara Grande, a tributary of the River Ivahy, and is connected by a road of 26 miles with the town of Prudentopolis.	Beans, maize, barley, wheat, buck-wheat, potatoes, sugar-cane, manioc, vegetables, hay, lucerne.	Poles, Austrians, Russian-Poles, Brazilians.
Apucarana . . .	5.200 00	550 00	—	*State of Paraná, Municipality of Tibagy.*—The chief town is 7½ miles from Therezina, 95 miles from Ponta Grossa and 80 miles from Frontin station on the S. Paulo Rio Grande Railway.	Beans, maize, rice, manioc, wheat, rye.	Russian-Poles, Austrian-Poles, Brazilians.
Annitapolis . . .	96.935 00	—	14°4	*State of Santa Catharina*, 27 miles from the headquarters of the old colony of Therezopolis. This colony is situated in the centre of a zone of public lands of superior quality, 58 miles from Florianopolis.	Maize, beans, rice, wheat, rye.	Germans, Austrians, Swiss, Russians, Brazilians.
Esteves Junior .	15.200 00	220 00	20°	*State of Santa Catharina, district of Tijucas*, watered by the rivers Alto Tijucas, Boa Esperança, Engano and their tributaries; 78 miles from Florianopolis.	Maize, beans, rice, rye, wheat, manioc, potatoes, vine, apples, figs, vegetables.	Germans, Austrians, Russians, Swiss, Italians, Brazilians.
Rio Branco . . .	4.367 00	86 00	—	*State of Santa Catharina, Municipality of Joinville*, between the rivers Itapocu, Putanga and Jacu Assu; the colony is also crossed by the river Ponta Comprida, tributary of the Itapocu; 17½ miles from Joinville, on the S. Paulo-Rio Grande Railway.		
Ivahy	16.274 00	764 40	20°	*State of Paraná, Municipalities of Ipiranga, Imbituva and Guarapava*, 42 miles from Fernandez Pinheiro station on the S. Paulo-Rio Grande Railway and 56 miles from Ponta Grossa.	Maize, rye, beans, barley, wheat, vegetables, buck-wheat, potatoes.	Austrians, Brazilians, Russians, Germans, Dutch.
Tayo	1.554 00	800 00	20°	*State of Paraná*, 3 miles from Ipiranga (carriage road).	Maize, rye, beans, wheat, barley, hay, potatoes, vegetables.	Austrians, Germans, Russians, Brazilians.
Jesuino Marcones	1.480 00	750 00	19°	*State of Paraná, Prudentopolis municipality*, at the source of the Rio dos Patos. United by an excellent carriage road of 23 miles, and also connected with the Iraty colony by a road of 34 miles.	Rye, maize, beans, wheat, hay, potatoes, buckwheat, linseed, manioc, vegetables.	Austrians, Russians, Brazilians.
Vera Guarany . .	17.946 50	776 00	19°	*State of Paraná.*—This colony, whose centre is 4 miles from Paulo Frontin station, on the S. Paulo-Rio Grande Railway, extends to the banks of the river Iguassu.	Maize, beans, rye, wheat, buckwheat, manioc, barley, potatoes, rice, vegetables.	Austrians, Brazilians-Germans.
Iraty	6.240 00	790 00	19°	*State of Paraná*, 11 miles from Iraty station (S. Paulo-Rio Grande Railway).	Maize, beans, rye, wheat.	Germans, Dutch, Russians, Austrians, Brazilians.
Yapo	—	—	—	*State of Paraná*, Municipality of Castro.		

(*) A hectare is nearly 2½ acres. (1) Centigrade.

The following are the current rate of wages in Rio de Janeiro, according to Mr. Oakenfull's *Brazil in* 1912—

	Per day.
Smiths	8/– to 13/6
Millhands	6/6 ,, 13/6
Leather workers	Up ,, 13/6
Glass-blowers	Up ,, 25/–
Brick and Tile Makers ..	10/6
Bakers	10/6
Brewers	16/–
Hatters	10/6
Shoemakers	10/6
Cabinet-makers	13/6
Painters	8/– to 20/–
Tram Conductors	8/– ,, 10/6
Day Labourers	3/6 ,, 4/–
Gardeners	4/– ,, 6/6
Turners	8/– ,, 10/6
Tailors	5/6 ,, 10/6
Printers	8/– ,, 13/6
Masons	6/6 ,, 13/6
	Monthly Salaries.
Junior Clerks	£6 to £12
Book-keepers and Cashiers	£12 ,, £35
Shop Assistants	£4 ,, £30, with meals
Policemen	.. £7 10s. ,, £12 10s.
General servants	£1 ,, £3 5s.
Female Cooks	£2 ,, £6

The following rates for São Paulo are obtained from official sources—

	Per day.
Tailors	5/6 to 6/6
Fitters	9/6 ,, 11/–
Barbers	4/– ,, 5/–
Coppersmiths	6/6 ,, 8/–
Paviours	6/6 ,, 8/–
Carpenters	6/6 ,, 8/–
Tanners	6/6 ,, 8/–
Hatters	4/– ,, 5/–
Confectioners	3/– ,, 7/–
Mattress-makers	3/– ,, 7/–

Rates for São Paulo—*continued.*

	Per day.
Bookbinders	6/6 ,, 8/–
Stonemasons	13/– ,, 20/–
Chauffeurs	6/6 ,, 8/–
Ironfounders	6/6 ,, 8/–
Tinware workers	8/– ,, 9/6
Smiths	8/– ,, 9/6
Stonebreakers	4/– ,, 5/6
Candlemakers	4/– ,, 5/6
Lithographers	9/6 ,, 17/–
Cabinet-makers	6/6 ,, 8/–
Marble-polishers	6/6 ,, 8/–
Goldsmiths	6/6 ,, 8/–
Painters	8/6 ,, 9/6
Bricklayers	8/– ,, 11/–
Shoemakers	5/6 ,, 6/6
Saddlers	6/6 ,, 8/–
Locksmiths	9/6 ,, 11/–
Weavers	4/– ,, 5/–
Dyers	4/– ,, 5/–
Coopers	6/6 ,, 8/–
Compositors	6/6 ,, 8/–
Turners	8/– ,, 11/6
Glassworkers	6/6 ,, 8/–

In the smaller capitals of the South, the rates of pay are very similar though living is cheaper, but the demand for labour in those centres is not so regular and so extensive as in the two big cities named.

CHAPTER XIII

MINES AND MINING LAW

THE mineral wealth of Brazil has in the past received more attention than the products of its plantations, its pastures, and its forests. A century ago the country was famed for its diamonds and its gold; and it comes as a surprise to the student of figures when he realises how insignificant the mineral production of Brazil really is. It is impossible to pick up a publication dealing with the country without reading of the riches held by the soil of every State, and the fabulous richness in minerals of the State which has been named Minas Geraes (General Mines). It is surprising, therefore, to find that the coffee produced by the State of General Mines is worth at least six times the total of its mineral production, and that in other parts of Brazil there is no mining worth the name; only a desultory scratching of the ground and fossicking in stream beds.

It must not be assumed from the figures that the mineral wealth of Brazil is a myth, or that the clever people who devote themselves to exploiting the riches of the earth in all sorts of far-off countries have overlooked the opportunities Brazil presents. The mines of Brazil remain, for the most part, unexploited, because of the unsatisfactory mining laws.

The Federal law on the subject may be outlined in a few words. All minerals are the property of the landowner, and there is no legislation to compel that person to take a reasonable view of the percentages due to the

owner of the soil. Ownership of land is vague in many parts of Brazil, and some disheartening experiences of litigation have been recorded in the past by investors who have been forced to abandon promising propositions, owing to the unreasonable rapacity of persons who claimed to own the land it was sought to mine.

Reform of the mining law is one of the pet topics of Brazilian politicians; in the meantime, the mineral wealth of the country is safe in the soil, and likely to remain there until action is taken by the Federal legislature.

In the State of Minas Geraes, it has long been recognised that this condition of mining law was oppressive and reactionary; and, after careful study of the mining laws of the United States and of the Oversea Dominions of Great Britain, a State law was passed to ameliorate the lot of the mining investor.

This law is of a date as recent as September, 1911, and its main provisions are as follows—

Concessions for the exploitation of mineral deposits shall be granted by the President of the State on state lands alienated for agricultural purposes, the mining rights of which are conserved, and also in state lands and in the watercourses of the State. Minerals are divided into two classes: (1) Diamonds and precious stones in unexploited lands; gold, silver, platinum, copper, zinc, and mercury; and monazitic sands. (2) Iron and manganese; and diamonds and precious stones in land already exploited.

These concessions will be made independently of any public sale, and on application to the Secretary of Agriculture. The application must contain the following information: a clear indication of the exact locality of the deposit; and the extent of land required for its exploitation, or the length of the section of a water course required.

The Kind of Mineral to be Exploited.—The application must be accompanied by specimens of the mineral taken from the deposit, and a professional report on the geology of the district.

Within 15 days from the deposit of the application, notices will be posted in the district, and remain posted for 60 days, inviting all who claim any right upon the deposit to make themselves known. This is only done in cases where the property is not clearly that of the state. If there is no opposition, the concession is made at the end of the 60 days.

If the land is being used for agricultural purposes, the agriculturist must be recompensed for any damage done to his industry. The fees are estimated for each concession, and cover the cost of the preliminaries ; in addition an annual tax is charged. It is from 6s. 8d. to 13s. 4d. a hectare for deposits of the first class ; and from 8d. to 6s. 8d. a hectare for deposits of the second class. The concession may be extended to give the right to use the local stone and timber, and even to take advantage of the energy developed by waterfalls in the vicinity. Concessions have a term of 30 years.

If several applications are made simultaneously for the same concessions, preference will be given (1) to the applicant who made the discovery, (2) to the owner of the land, if it has been sold by the government, (3) to proprietors of mines of the same kind, (4) to the applicant who offers the best terms.

Right to seek for minerals will be conceded by the State government on areas of government land not exceeding 100 hectares, or in stream-beds of an extent not exceeding 25 miles.

Such a licence costs £6 13s. 4d., and lasts for a year, and may be extended for a second year.

These are the main provisions of the new mining law of Minas Geraes, which has given such satisfaction to those interested in the industry, that it has been copied to some extent by other Brazilian States, notably Bahia.

In the near future, iron is likely to take first place among the mineral products of Brazil. All the iron ores of Brazil are oxides, and are richer in iron than the

highest grade of Swedish ores. The deposits of Minas Geraes are enormous in their extent; the mountains of Itabira do Campo and Itabira do Matto Dentro being practically composed of rich ore. The quantity of iron in this deposit alone is conservatively estimated at 1,000,000,000 tons. The process of mining is economical, for the ore can be shovelled away by steam shovels when required. At Gandarella there is a huge deposit of a mineral locally known as "Canga," which is a very rich iron ore. It spreads over the surface of the ground to a depth of from 15 to 20 ft.; this deposit is estimated to contain 100,000,000 tons of pure iron. When it is considered that Brazil annually imports 500,000 tons of iron, the economic waste in allowing these deposits to remain undeveloped will be grasped.

The difficulties are not easily overcome, however. In the first place, there is no coal in the neighbourhood; indeed, a seam of good coal remains to be discovered in Brazil. The iron, now being smelted in the State of Minas—and there are two smelting establishments busy in that State—has to be obtained by the use of charcoal as fuel. The second difficulty is the remote position of the iron fields: in the mountainous eastern part of the State. But month by month the Victoria–Minas railway is pushing its rails to the fields, and will shortly put them in railway communication with the port of Victoria (Espirito Santo).

In connection with this railway, a scheme has been proposed for the effective working of the iron deposits. It is proposed to develop the energy of the waterfalls of the river Doce, a fine stream which flows through the

district, and to apply the electric power so obtained. The purposes for which the electric current are to be applied are double: the electrification of the railway and the smelting of the iron by electric furnaces. With the employment of the local charcoal, it is expected to produce the steel rails which Brazil is importing from year to year in large quantities.

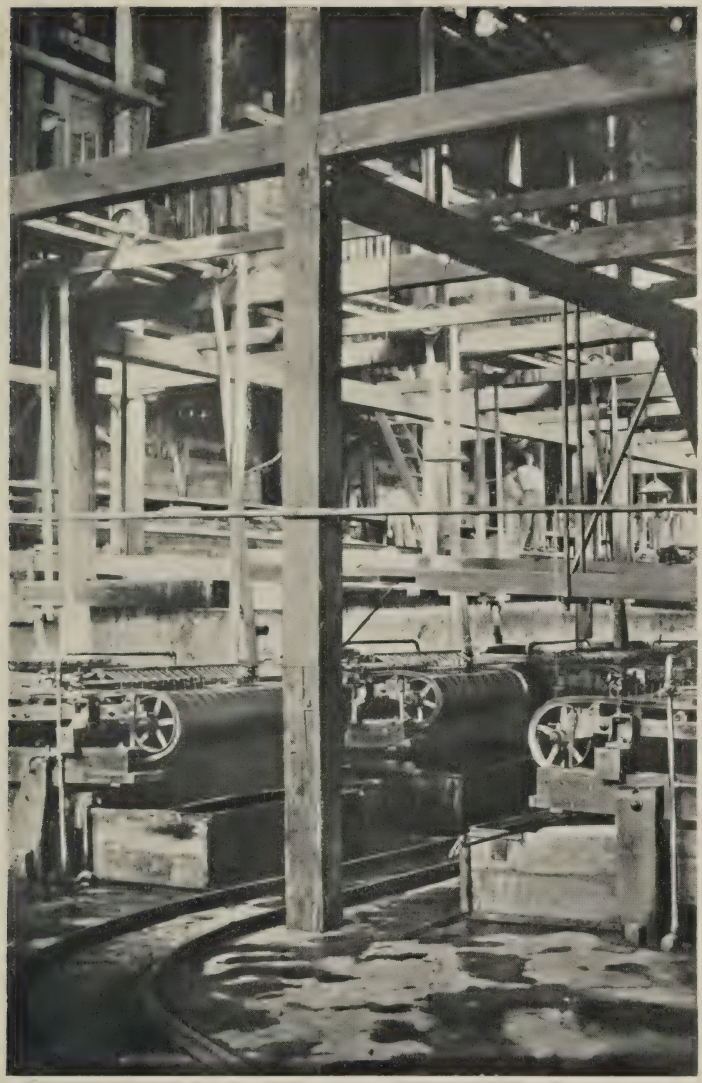
On this scheme the British Consul reports in his 1911–12 *résumé*—

> "An idea of the magnitude of the undertaking may be gathered from the fact that the company is to have a capital of £22,000,000. At present matters are rather at a standstill. The difficulty of securing labour, which is on the whole poor and expensive, and the absence of adequate means of transport to the coast, and thence to the market, have prevented any exploitation of this mineral in the past."

Outside the State of Minas Geraes, there exist deposits of iron ore which have been worked in the past, notably at Ipanema, a little village 13 miles from Sorocaba, in the State of São Paulo. Here furnaces and all the equipment for smelting exist, and a line of rails connects the place with the Sorocabana system. The ore deposit contains 70 per cent. of pure iron, but the exploitation of the deposit has been tacitly abandoned.

Iron deposits have already been proved to abound in the States of São Paulo, Santa Catharina, Espirito Santo, Goyaz, Bahia, Matto Grosso, Rio Grande do Sul, and, of course, Minas Geraes.

Gold.—The mines of Minas Geraes produce annually gold of the value of about £500,000, and the quantity seems to be declining rather than increasing. Outside Minas, there is gold mining at Lavras, in Rio Grande do



Gold Extraction Plant, Honorio Bicalho, Minas Geraes

Sul, and a good deal of alluvial prospecting in the central States; but the total annual gold output of the country does not reach £600,000 in value. Yet nearly every Brazilian State claims the possession of auriferous deposits. It is possible that when the central States are made accessible by railways, valuable gold veins may be discovered there, for the alluvial of the streams has been very rich, and is renewed by each rainy season —a fact that points to the existence of rich sources somewhere in the interior.

The gold mining of Minas itself has suffered some curious vicissitudes since the proclamation of the Republic. Some twenty-eight companies have been floated to exploit the auriferous veins of the State, but most of them have died. The six large mines, from which the bulk of the gold is taken, are: Morro Velho, Passagem, São Bento, Juca Vieira, Cuyaba, and Descobarto. Most of the capital employed is British, and the engineers and managers are of British nationality. A mining tax has to be paid.

MANGANESE.—Manganese exists in Minas Geraes, near Queluz; in Bahia, at Nazareth; and is mined at both places. The manganese exported in 1912 was valued at £230,000. Deposits have been proved in Santa Catharina and other States.

MONAZITIC SANDS.—Large beds of monazitic sand, commercially valuable because of the thorium it contains, exist on the coasts of Espirito Santo and Bahia. The thorium is used in the manufacture of incandescent mantles, and the sand is a valuable export. The exports for 1912 exceeded £100,000 in value.

COPPER is mined in the State of Rio Grande do

Sul, where numerous veins exist between Cacapava, Encruzilhada, and Camaquam. In Bahia and Ceará well-defined copper deposits have also been proved.

Coal is being mined at Tubarão, in the State of Santa Catharina, and at São Jeronymo, Jaguarão, and Candiota, in the State of Rio Grande do Sul. It is not of good quality, and contains a large percentage of foreign matter, burning with 25 per cent. of ash. The lack of coal is one of the economic disadvantages which at present retards the progress of Brazil.

Diamonds.—Brazilian diamonds are noted for their quality. The annual production is about £200,000 in value, to which must be added the value of the carbonadoes, or black diamonds, of Bahia, which are worth £75,000 in a good year. The chief diamond fields are in Minas Geraes; at Diamantina, and at Bagagem. Diamonds are also found in the streams of the central States, where very primitive methods are employed in seeking them. Other precious stones, such as aquamarines, tourmalines, and topazes—all of great size—are found in the eastern districts of Minas Geraes, especially near a place called Arassuahy, in which locality there also exists a large supply of rose-coloured rock crystal. The rock crystals used for optical appliances are found in the State of Goyaz, in a range of hills very rich in these stones, and called the Crystaes.

It would be as idle to review the other minerals that have been discovered in Brazil as it would be to doubt that the country is highly mineralised; but its mineral wealth is only a matter of conjecture for the present.

Salt and Lime.—More commercial value is attached

for the present to the salt fields of Rio Grande do Norte and Rio de Janeiro, and to the valuable lime that is found in many of the States. The only mineral exploitation yet encouraged in Brazil is the production of iron, and success can only be a matter of a few years at the outside.

A school of mining exists at Ouro Preto, the old capital of Minas Geraes. The instruction given is excellent, but it is recorded that few of the students remain to complete the full course of technical and practical teaching.

CHAPTER XIV

PASTORAL AND FOREST PRODUCTS

BRAZIL ranks as the fourth cattle country of the world, the approximate figures being—

United States	75,000,000
Russia	50,000,000
Argentine Republic	35,000,000
Brazil	25,000,000

The seven Southern States contain quite half the cattle herds of the Republic. The figures are set down as follows—

Rio Grande do Sul	7,000,000
Minas Geraes	3,500,000
São Paulo	750,000
Santa Catharina	560,000
Rio de Janeiro	500,000
Paraná	350,000
Espirito Santo	100,000
Total	12,760,000

It is not only in cattle that Rio Grande do Sul is pre-eminently the pastoral State of Brazil, for it has enormous reserves of other live stock, as the following list will show—

Cattle	7,000,000
Horses	1,500,000
Mules	600,000
Goats	600,000
Sheep	3,000,000
Pigs	8,000,000

PASTURE.—The pastoral country of Brazil is divided into three zones. The first is the Southern zone, comprising all or nearly all the State of Rio Grande do Sul and the uplands of Santa Catharina and Paraná. The best pastures are the open plains of the south and west of these States, where flourish all kinds of fine natural grasses, including the famous *flechilla*, a natural grass on which cattle thrive. In the north and east the pastures alternate with woods, and here thrives the *catingueiro*, one of the most valuable forage plants in the world. It grows everywhere in Brazil, and is among the most valuable pastoral assets of the country.

CATTLE.—Apart from the State of Rio Grande do Sul, it must be said that the cattle of Brazil are remarkable more for their quantity than their quality. They are the descendants of a race introduced from Portugal some centuries ago, and have deteriorated during the interval because of constant in-breeding. In Rio Grande do Sul care has been taken to revivify this ancient stock by judicious importation of fresh blood and by wise crossing. This process is going on with satisfactory results, the best British and Continental strains being used to infuse fresh vigour into the local herds.

A start in the same direction has been made elsewhere, but up to the present no great success has been achieved. The initial trouble is that all imported beasts are liable to a complaint known as Texas fever, and from that cause great mortality among imported cattle has resulted. For this reason, experiments were made with the zebu or Indian cattle, and at first it was supposed that the difficulty had been overcome. But the zebu, although easily

acclimatised, has not been a success, the results expected by crossing with the local strain not having been achieved. The opponents of the zebu roundly declare that the chief attributes of the cross are bone and bad temper, neither desirable qualities in cattle grown for their meat. Latest reports show that the State of Minas Geraes, which led the way in the importation of the zebu, has declared against the strain.

The stud farms instituted by the Department of Agriculture all have their studs of valuable cattle, imported at great expense. The directors of these institutions are mostly Belgian and French gentlemen, the natural result being that resort has been had to such strains as the Limousine. In Rio Grande do Sul, where Argentine methods have afforded an object lesson, the fancy is for Durhams and Herefords ; and these strains, with polled Angus, have done very well there. Further north they appear to have been susceptible to the Texas fever, and many have died from that cause. The result of further experiments is being watched with interest.

The Brazilian races of cattle are several, the best of them being the Caracu, which is the root-stock of the herds of Rio Grande do Sul : a short-legged, short-necked breed of mild disposition. The Caracu is not a good milker, but its meat is of good quality, and the breed is of fair size. The Franqueiro comes from Minas and North São Paulo, and is a gigantic race with huge horns. Like many of the Brazilian breeds, this animal runs a good deal to bone and hide, and is not comparable to the Caracu.

It comes rather as a surprise to find that the vast

herds of Brazil do not suffice to meet the local requirements for meat. This is particularly the case with the *charque*, or dried meat, which forms part of the every-day diet of the Brazilian workman. Over £1,000,000 worth of this article is imported every year, in spite of the output of the factories of Rio Grande and Matto Grosso, and this in spite of the fact that it pays a heavy import duty. This apparent anomaly is largely explained by the inferiority of the Brazilian cattle, one of which only furnishes about half the weight of dried meat yielded by the average ox slaughtered in similar establishments in Argentina and Uruguay.

About 200,000,000 lb. of *charque* are made every year, and of this Brazil consumes 180,000,000 lb. and produces only 140,000,000 lb. The bulk of the home production comes from Rio Grande do Sul, where there are twenty-four *charqueadas*, or *saladeros* as they are called elsewhere in South America. The State annually slaughters 900,000 head of cattle for this purpose alone; and, in addition to the dried meat, the product of the *charqueadas* is 35,000,000 lb. of salted hide, 29,000,000 lb. of fat, 1,300,000 lb. of horn, and 210,000 lb. of neat's-foot oil.

The best of these establishments are conducted with admirable system and economy. The cattle-yards are divided and subdivided into large and small pens; and in the smallest of these pens one animal after another is driven upon a car, which is propelled over rails to the slaughter-house. The process of killing, skinning, and dismemberment is carried out expeditiously and systematically. Skins, horns, bones are all dispatched to separate parts of the establishment, and then the meat

is deftly cut into large, thin slices about 2 ft. square. It is liberally salted and cast into pits, where the salt soaks in. It is then taken to the drying rooms, and subjected to a heat which expresses every particle of fat and cures it very thoroughly, the process lasting several days.

The article of food thus produced contains a great quantity of nourishment for its weight. It is thus suited for consumption in the rubber forests of the Amazonian valley, and everywhere else where fresh meat cannot be obtained. When fresh, it is not unpalatable, after the salt has been boiled out of it ; but it has a distinctly rancid flavour after being kept for some time in the hot climate of Brazil. Its consumption tends to increase rather to than decrease, but there is little doubt that with improved traffic facilities the industry will be transferred to the inland States of Brazil, and that the pastoralists of Rio Grande will devote themselves to the frozen and chilled beef industry.

Horses.—Horses were introduced by the Portuguese into Brazil, but the progress of time has seen the breed deteriorate very sadly. At the present time, efforts are being made to improve the Brazilian horse, the Army authorities hoping to provide their troops with locally-bred remounts. For this purpose, stallions have been imported with good results, especially in São Paulo, Minas Geraes, and Rio Grande do Sul. Of the local horses, those bred in Goyaz are the best, for, though small, they are hardy and of good courage. Asses and mules are also bred in the Southern and Central pastoral States, and the mules are proving very serviceable in the interior.

Sheep.—Both São Paulo and Rio Grande do Sul are devoting attention to sheep breeding, and have proved that good wool and good mutton can be produced in Brazil. The vast plains of the centre and the South, with their high elevation and good pastures, are likely to prove the home of the Brazilian flocks in the future.

Pigs.—The pig is one of the first animals introduced by the Portuguese into Brazil, and it has thriven everywhere. The abundance of maize provides a good fattening food, and the greater part of the pigs of the country are kept for their lard—a product freely used in Brazilian cookery. In the State of Rio Grande do Sul, pigs are kept for bacon, which is an important export of the State.

There are two or three local breeds, all of them large and running a great deal to fat. The best known are the Canastra, the Canastrão, and the Mestiça. The second of these breeds, when crossed with imported Yorkshires, gives a pig of a very good strain ; and in Minas Geraes, the pig State of Brazil, this cross is the kind of pig most esteemed.

Dairy Produce.—Minas Geraes is not only the pig State of Brazil, but it is the dairy State as well, and contrives to feed the Federal capital with the produce of its small farms. Some of its exports to its neighbours during the year 1911 are : lard, 3,688 tons ; cheese, 6,079 tons ; milk, 11,833 tons ; butter, 3,060 tons ; poultry, 3,000,000 pairs of one kind and another ; and 647 tons of eggs. Minas is a stock-raising country as contrasted with a stock-breeding one, and here are fattened the store cattle of the Central States. But

Minas keeps cattle very largely for dairy produce, and finds it pays very well.

Another dairying State is Santa Catharina where there are a number of flourishing German colonies. Among its exports are 1,653 tons of lard and bacon and 700 tons of butter. The breeds of dairy cattle most in favour are the Dutch, Belgian, and French strains, but Santa Catharina has evolved a dairy strain of its own, called the Blumenau.

Forest Products.—No State of Brazil is more solidly prosperous than Paraná. It shows an annual surplus, and its railways are considered one of the finest assets of the Union, so prosperous are they. Its capital, Curitybá, is one of the cities in Brazil where all are comfortable without making the display of wealth noticeable in larger cities. And the prosperity of Paraná is based upon the forest products of the State.

Maté. The main factor is maté, a tea which is drunk all over South America, and the use of which is spreading elsewhere. This tea is the product of a shrub which grows freely in the forests of Paraná, and also in Santa Catharina, Rio Grande do Sul, Minas Geraes, and the Republic of Paraguay. But the chief supply comes from Paraná, which exports 45,000 tons of this tea every year.

Maté is the dried leaf of the shrub known botanically as *Ilex Paraguayensis*, which grows to the average height of from 15 to 20 ft., and even higher. It is claimed that an infusion of these dried leaves is the best of stimulants and tonics—a digestive and sustaining drink which has all the stimulating effects of tea or coffee, without any subsequent reaction. Medical testimony is practically



Transporting Maté in the Leaf, Paraná

unanimous upon the excellent qualities of maté, and it has the advantage of being a cheap as well as a wholesome stimulant.

It should be cheap, for the gathering of the leaves is attended by no ceremony at all. The bushes grow wild, and the harvest is taken by the simple method of pruning back the tree, removing the greater part of its leaves and small twigs. The tree is then allowed three years to recover, but the number of these bushes in Paraná is so great that there is no inconvenience to the industry in allowing the trees this law.

All the clippings are gathered together, and dried by the heat of a fire of wood. The next process is a thorough roasting, after which the desiccated twigs and leaves are beaten with heavy sticks. The whole mass is afterwards ground fine in a mortar, and is then considered ready for use. This is the rough original way, but improved methods have recently been introduced, which result in a better quality of maté. They involve the carriage of the twigs and leaves, after their preliminary drying, to the factories in Curitybá, where they undergo the subsequent processes.

The cost of maté of good quality at the port of the State is no more than 3d. per lb., yet fortunes are made in the gathering and preparation of this simple forest product. Santa Catharina exports about 6,000 tons of maté ; and Rio Grande has also a considerable export, amounting to some 8,000 tons annually.

Timber. The Brazilian pine is another of the sources of prosperity of Paraná. These pines cover wide tracts of country, growing very close together, with their

straight trunks surmounted by a curious tuft of straight branches, growing at right angles to the trunk of the tree. Many of these trees are of great age, the examination of the section of a trunk showing an almost countless number of rings, so close together that they can only be detected by the aid of a microscope. Their timber is excellently adapted for all the uses to which pinewood is usually put. In a prepared state, the trade is a large and growing one, furnishing the raw material for the prosperous match factories of Curitybá, São Paulo, and Rio de Janeiro; and other uses for it are being found every year. It is the hope of the people of Paraná that their pine will one day be employed for the construction of the boxes used by the Amazonian States for shipping the rubber from Belém and Manaos. At present, the rubber States rely on foreign wood for this purpose.

From Espirito Santo down to the northern border of Rio Grande do Sul, the serras along the coast are covered from foot to summit with dense forests of fine trees. Most of these trees yield timber that is of value, either for sleepers, for building purposes, or for the making of furniture. The business of supplying sleepers is in itself a large one, so widespread has been the work of railway extension in Brazil. The timbers used are Faveiro, Peroba-mirim, and Jacaranda, and all have been proved to answer admirably the purpose.

The consumption of wood as fuel is very heavy in Brazil, for, owing to the lack of coal, the railways and factories burn little other fuel. Wood is also the household fuel, and the demand makes a constant drain even upon the rich forests of the serra. Fortunately, timber

of the kind used for fuel grows rapidly in Brazil, and wasteful methods do not bring the punishment they would in a climate less favoured.

Some of the Brazilian woods are admirably adapted for the purpose of street paving, but little use is made locally of them for that purpose. An experiment made some years ago in São Paulo did not prove successful, and the application for this purpose was abandoned, apparently without any further attention being paid to the possibility of development.

The woods of Brazil used for furniture making are of a beauty and value unsurpassed in any part of the world. First place must be given to the Pallisande exported by the State of Espirito Santo. Some of the varieties of this timber are of beautiful colours : violet, purple, red, black, and yellow being much prized. This wood is exported to France, where high prices are paid for it by the makers of luxurious furniture. The construction of the Victoria to Minas railway has thrown open a district where this beautiful wood grows in abundance, but the export trade has not yet been systematised. Other timber is admirably suited to shipbuilding, and in this class the Peroba ranks high. Rosewood and satinwood are also among the furniture woods, while for ordinary building purposes, Brazil supplies a list of timbers containing hundreds of varieties. There are also some useful dyewoods, including the well-known Pao-brazil (red) and Satajuba (yellow).

The official publications give lists of these timbers, which have attracted great attention at exhibitions where they have been shown ; and the organisation of a great timber industry is likely soon to take place in Brazil.

CHAPTER XV

MANUFACTURING INDUSTRIES

THE latest statistics show that there are, in Brazil, 3,664 manufacturing establishments which are classified as important. These establishments employ 168,764 workers, and represent £48,693,000 of invested capital; and their output is valued at £54,120,000 a year. There are, besides, a very much greater number of smaller establishments, which represent, in the more primitive communities, an important addition to the manufactures of a young country like Brazil.

The figures show an increase in five years of 544 establishments, of £5,120,000 in the capital invested, of £5,365,000 in the value of annual product, and of nearly 20,000 in the number of workers employed. It is possible that the smaller industries have increased on a scale even more encouraging, under the heavy protective tariff that Brazil imposes. The incidence of that tariff may be gathered from the simple statement that all wearing apparel, such as hats, boots and shoes, dress materials and cloth, pays a duty that is never lower than 60 per cent. *ad valorem;* and that expenses of carriage to the inland centres add enormously to the cost to the purchaser of such imported articles.

In the circumstances, it is only natural that the manufactures of Brazil should be expanding; especially in South Brazil, where the majority of the important establishments are situated.

State.	No. of Establishm'ts.	Capital.	Value of Product.	No. of Workers.
		£	£	
Espirito Santo ..	8	83,400	80,633	400
Minas Geraes ..	552	1,653,624	2,412,713	10,091
Paraná	302	1,401,133	2,262,680	4,824
Rio de Janeiro ..	1,143	18,351,514	20,980,360	54,325
Rio Grande do Sul	328	3,153,261	6,845,254	15,907
Santa Catharina ..	174	645,933	944,627	2,106
São Paulo ..	384	11,070,480	9,338,540	33,252
	2,891	36,369,345	42,864,807	120,905

First place must be conceded to the TEXTILE INDUSTRY, which is well established in almost every State of Brazil. Cities like Rio de Janeiro have great cotton mills, the workers of which are numbered by hundreds, and the output valued in hundreds of thousands sterling. Small mills are common in the less important centres. The numbers given show how widespread is the industry: Espirito Santo, 4; Minas Geraes, 38; Paraná, 5; Rio de Janeiro, 47; Rio Grande do Sul, 9; Santa Catharina, 13; São Paulo, 52. The majority of these establishments are cotton mills; but there are also woollen mills, one or two establishments for weaving silk, and several for making coffee and sugar bags from jute and from native fibres.

The cotton-spinning industry originated in the State of Minas Geraes, where the best and most tasteful materials are still turned out. One speciality of the State is a material that bears the name of *brim mineiro*, and is noted for the beauty of its fast colours, and the taste and elegance of the designs. Minas preserves its

skill in cotton weaving; and though there are in the State no mills on the great scale of Rio de Janeiro and São Paulo, the industry is an important one to the State. In Minas, looms are often established in private dwellings, and the number of small establishments is very large.

The textile industry gives employment to some 45,000 of the 120,000 workers engaged in the industrial establishments instanced above.

SUGAR.—Next in value of output to the textile industry is that of extracting sugar and alcohol from sugar-cane. This is an industry more native to the North than the South of Brazil, though the big sugar mills are found all over the Southern States. It will be more convenient, however, to deal with the sugar extraction in the volume on *Northern Brazil.*

Next on the list for value of product comes the *charque* or dried meat, which is the special product of Rio Grande do Sul. The methods of preparation are explained in the Chapter dealing with the "Pastoral and Forest Products."

The products of the saw-mills, and cabinet-makers' and carpenters' shops, take next place in value. These are the industries of Paraná and of Espirito Santo. Rio de Janeiro also prepares large quantities of local timber for building purposes.

Next comes the industry of SHOEMAKING, largely concentrated in Rio de Janeiro and São Paulo.

HATMAKING is almost as important an industry in the two great cities; hats of straw, felt, and silk being produced in quantity.

MATCHMAKING is one of the industries of Paraná, where grows the pine used as material. Rio de Janeiro has also large factories, and three exist in São Paulo. The preparation of maté for the market is the most important of the industries of Paraná, which owes its prosperity as a State to the value of this product.

BREWERIES are prosperous in all the big cities, and so are the establishments where mineral waters and other aerated drinks are made.

TANNERIES, LIME AND CEMENT WORKS, POTTERIES, SUGAR REFINERIES (as distinct from the sugar-mills, where the raw sugar is expressed from the cane), and PRESERVING FACTORIES for the preparation of jam and preserved meats are other prominent industries of Southern Brazil.

Figures of the total output and the number of small establishments are only obtainable in the cases of those articles of manufacture which pay consumption duty or excise.

From the Customs Department the following figures are obtainable for 1911, but they represent the whole of Brazil; and it is not possible to distinguish the product of the Southern States from that of the North and centre—

ESTABLISHMENTS, MAJOR AND MINOR—

Boots and Shoes. 4,542 establishments produced 12,577,578 pairs of boots and shoes.

Tobacco and Cigars. 2,118 establishments produced 114,000,000 cigars, 17,230,000 packets of cigarettes, and 1,500,000 lb. of prepared tobacco.

Breweries and Aerated Water Factories. 1,544

establishments produced 100,000,000 bottles of beer and 20,000,000 quarts of other bottled drinks.

Salt Works. 834 establishments produced over 300,000,000 lb. of salt.

Chemical Products. 623 establishments.

Hat and Umbrella Factories. 534 establishments produced 2,500,000 hats and 1,250,000 umbrellas and sunshades.

Vinegar Factories. 319 establishments produced 6,000,000 quarts of vinegar.

Preserving Factories : 291 establishments produced 17,500,000 lb. of preserved food and jam.

Scent Factories : 272 establishments produced 8,000,000 bottles of scent.

Cotton Mills : 190 establishments produced 500,000,000 yds. of cotton goods and 1,000,000 coverlets.

Walking-stick Factories : 20 establishments produced 12,750 sticks.

Match Factories : 30 establishments produced 488,000,000 boxes of wooden matches and 37,000,000 boxes of wax matches.

Candles : 11 establishments produced 11,000,000 packets of candles.

Playing Cards : 7 establishments produced 358,000 packs of cards.

Rio de Janeiro.—The most important manufacturing State is Rio de Janeiro, which, including the Federal area, numbers nearly 1,000 of the industrial establishments classed as important. Of these, quite 75 per cent. are in the city of Rio de Janeiro, where about 50,000 workers find this class of employment. There are,

besides, manufacturing centres at Petropolis and Nictheroy; while Campos is the headquarters of the sugar industry of the State.

Foremost among the manufacturing industries of the State is that of spinning and weaving cotton fabrics, for which 22 establishments exist in Rio alone, and others at Petropolis. In the latter town there are also 2 silk factories, the raw material, or the bulk of it, being imported from Italy. The duty on silk fabrics is so heavy, that the enterprise is a profitable one, and will be more so to the country when Brazil produces all its own silk—a development promised in the near future.

Next to cotton mills come hat and shoe factories, furniture manufactories, breweries, match factories, soap and candle factories, shops for woodwork, and a large number of smaller industries.

The following are the figures of the more important industries in the Federal capital: Textiles, 22; boot and shoe factories, 57; hat factories, 15; foundries and metal work, 43; breweries, 24; potteries, 19; match factories, 3; brushware, 12; flour mills, 4; umbrella makers, 15; soap and candles, 11; tobacco factories, 10.

In other parts of the State of Rio de Janeiro are: Textiles, 25; sugar-mills, 35; match factories, 3; breweries, 10; foundries and metal work, 8; paper and cardboard mills, 3; tobacco factories, 5.

São Paulo.—Next to the Federal district, the State of São Paulo is the most important manufacturing area in Brazil. There are, in the State, some 380 large factories, employing 35,000 workers and using machinery of 20,000 h.p. The most important industry is the

cotton spinning and weaving, in which only Brazilian raw material is used. There are in São Paulo 23 cotton mills and some woollen mills, as well as 2 factories for making coffee bags from jute.

In the shoemaking industry there are 9 large factories, as well as a number of smaller establishments. The output of boots, shoes, and slippers is over 4,000,000 pairs a year. Twelve hat factories turn out 1,500,000 hats of felt, straw, and silk each year. There are also in the State 3 large glass and bottle factories, which supply the 50 breweries of the State with all the bottles they need, and export bottles to other States. Twelve large sugar mills furnish employment for nearly 2,000 workers ; and the flour-milling industry of the State is now making rapid advance, 7 large mills being established in the State.

Other important industries are : Match factories, 4 ; potteries, 11 ; tanneries, 12 ; foundries and metal works, 24 ; oil mills, 5 ; preserves, 26 ; tobacco factories, 2.

Minas Geraes, although primarily a mining and agricultural State, has also important manufactures. First place is taken by weaving and spinning, there being altogether 38 establishments of this kind in the State. The principal industrial centre is the city of Juiz de Fora, which enjoys cheap electric power derived from a waterfall in the vicinity. It has cotton mills, a factory for the manufacture of agricultural machinery, another for making furniture, a nail factory, a boot and shoe factory, and other industrial establishments. Elsewhere in the State are found tanneries, shoe factories, saddlers' shops, hat-making works, furniture manufactories, match factories, and establishments for making rope, twine, and

sacks from the fibre of *pita*, *tucum*, *macauba*, and other locally grown vegetable fibres. In Minas Geraes are also the only two metallurgical works in Brazil, where pig iron is smelted from the local ore. These are the Esperança works and the Wigg works. Between them they produce 4,000 tons of iron rails in the year.

Other establishments are : Butter and cheese factories, 113 ; breweries, 36 ; tanneries, 28 ; foundries and metal works, 30 ; flour mills, 33 ; preserve factories, 27 ; soap and candle factories, 9 ; sugar-mills, 3 ; sugar refineries, 5 ; tobacco factories, 10.

PARANÁ. The principal industries of Paraná are the preparation of maté and wood for the market. There are in the State 32 establishments for the preparation of maté on a large scale, and 108 saw-mills and shops where wood is prepared for sale. Next in importance are the 3 match factories of the State, and in these three industries are engaged more than 3,000 hands, being nearly three-fourths of the industrial workers of the State.

Other industrial establishments are : Textiles, 5 ; breweries, 19 ; potteries, 15 ; boots and shoes, 7 ; tanneries, 12 ; foundries, 6 ; flour mills, 24 ; soap and candles, 9.

SANTA CATHARINA'S most important industries are the preparation of maté, the weaving of textiles, and the making of butter and cheese. There are 9 maté establishments and 13 textile mills in the State ; while the number of butter and cheese factories is 9. There are also 21 breweries, 3 potteries, 12 tanneries, 8 foundries, 17 flour mills, 5 soap and candle factories, and 5 tobacco factories.

In RIO GRANDE DO SUL the preparation of cattle

products takes first rank, and outside this industry the State has the following : Textiles, 9 establishments employ 2,518 workers ; hats, 13 establishments employ 539 workers ; boots and shoes, 9 establishments employ 665 workers ; breweries, 19 establishments employ 284 workers ; tobacco, 14 factories employ 404 workers ; furniture, 56 establishments employ 454 workers ; soap-works, 10 establishments employ 241 workers. Details of the industry in dried meat will be found in the Chapter on the " Pastoral Industry."

Espirito Santo has an important manufacturing centre at Itapemirim, where cheap electric power is available. There has been established a factory for weaving the vegetable fibres of the State, a large sugar-mill, a paper and cardboard factory, and a large sawmill and wood-works. Other industries are a cement factory and a cotton-seed oil mill. There are, besides, 3 cotton mills at Victoria and an important manufactory of tiles and similar articles at Vilha.

A considerable impulse to manufacturing activity has been derived in some of the States of South Brazil from the cheap electric power obtainable as a result of applying the energy of waterfalls. This cheap electric power is found more frequently in Minas Geraes and São Paulo than in other States. The ownership in the many falls in these States has been eagerly disputed in the past, and a custom has now arisen which is shortly to be enforced by legal enactment. This makes the waterfall on a river which flows through several States the property of the Federal Government. Where it flows through one State only, the falls are State property. In

the case of a river which rises in a certain municipality, and falls over a high rock in the same municipality, such a fall is considered the property of the municipality; and in many instances the municipalities have arranged for the development of the latent energy and have become the purveyors of electric power to the manufacturers of the district. Cheap traction and electric power are common in many of the moderate-sized towns of Minas Geraes and São Paulo.

The wealth derivable from waterfalls in South Brazil has only begun to be exploited. There remain some big falls, such as those of the Iguassu, in Paraná, and the Affonso Falls on the river São Francisco, where energy representing many million horse-power is at present being wasted, but will one day be utilised to the economic advantage of Brazil.

CHAPTER XVI

IMPORTS AND EXPORTS*

I.—General

The following table shows the value of Brazilian imports and exports (merchandise only) from 1901 to 1911 inclusive—

	Imports (£).	Exports (£).	Balance of Exports over Imports. %.
1901	21,377,270	40,621,993	52·6
1902	23,279,418	36,437,456	63·9
1903	24,207,811	36,883,175	65·6
1904	25,915,423	39,430,136	65·7
1905	29,830,050	44,643,113	66·8
1906	38,204,041	53,059,480	66·6
1907	40,527,603	54,176,898	74·8
1908	35,491,410	44,155,280	80·4
1909	37,139,354	63,724,440	58·3
1910	47,871,974	63,091,547	76·0
1911	52,944,809	66,838,892	79·2

The following table shows the value of the imports and exports of metallic specie and foreign bank notes for the same period—

	Imports (£).	Exports (£).	Balance of Imports over Exports (£).
1901 ..	1,398,431	58,314	1,340,117
1902 ..	1,078,444	31,936	1,046,508
1903 ..	951,375	102,442	848,933
1904 ..	804,953	8,900	796,053
1905 ..	2,909,533	10,731	2 898 802
1906 ..	2,963,446	32,750	2,930,696
1907 ..	4,410,621	15,329	4,395,292
1908 ..	141,736	20,700	121,036
1909 ..	8,851,619	11,408	8,840,211
1910 ..	9,439,851	2,331,938	7,107,913
1911 ..	7,840,336	2,406,090	5,434,246

* Tariffs. An English translation of the new Draft Customs Tariff for Brazil with comparison of the proposed and existing Rates of Duty is now procurable.

The general growth exhibited in these tables continued in 1912; in 1913 there was a slight set-back, not in quantities exported, but in values, resulting from a considerable fall in the prices obtainable for coffee and rubber. In the following analysis of imports and exports the figures given are those of 1911, the figures for later years not being as yet verified.

II.—Imports Analysed

The imports of merchandise for 1911 amounted to 795,563 : 450$ (paper), *i.e.*, £52,944,809, of which approximately—

56 %	consisted of	manufactures;
24 %	,,	foods and food-stuffs;
19 %	,,	raw materials or partly manufactured articles;
0·4 %	,,	living animals.

Specie was also imported of the value of 117,612 : 220$ (paper), *i.e.*, £7,840,336, making a grand total of 913,175 : 670$, *i.e.*, £60,785,145.

The largest classes of imports are as follows—

	Milreis, paper.
1. Engineering machinery	86,898,467
2. Steel and iron manufactures ..	81,424,363
3. Cotton manufactures	76,707,949
4. Coal, stones, earth, etc.	63,826,094
5. Wheat	36,053,110
6. Wines	35,143,734
7. Wheat flour	29,966,336

The imports are officially classified under four heads, viz.: (1) Live animals; (2) primary materials and those used in the arts and industries; (3) manufactured articles; and (4) alimentary products.

(1) Live Animals included 31,186 head of cattle, 80,844 sheep, and 1,190 horses.

(2) Of Primary Materials the largest item consisted of "*Coal, stones, and earths*" (including 1,736,213 tons of *coal*, mainly from Great Britain; *cement*, 268,689 tons, from Germany and Great Britain; *coal briquets*, *coke*, *asphalt*, *marble*, and *nitrate of soda*), the total value being 63,826,094 milr. Next came *jute* and *hemp* (half as yarn, half raw), 12,406,049 milr. *Pelts* and *skins* (practically all tanned and prepared) valued at 11,648,504 milr. *Cotton* (about two-thirds sewing thread, and the rest raw and carded cotton) was valued at 10,164,997 milr. Among other items, in descending order, were: Material for perfumery, painting, and dyeing; woods (chiefly pine from the U.S.A.); steel and iron; vegetable extracts and oils; seeds, roots, barks (chiefly malted barley, leaf tobacco, and hops); and wool.

(3) Of Manufactures, the largest items were: *Engines*, *machinery*, *tools*, and *hardware*, value 86,898,467 milr. (mainly from U.S.A., Great Britain, and Germany); *articles of steel* and *iron*, value 81,424,363 milr.; *cotton* (the bleached, unbleached, printed, and dyed goods, practically all from Great Britain), value 76,707,949 milr.; *chemicals* and *drugs* (including mineral waters), value 18,485,084; *carriages* and *vehicles* (railway cars, motors, etc.), value 18,080,984 milr; *paper goods* (plain and printed), 17,525,868 milr.; *earthenware*, *porcelain*, and *glass*, value 14,009,235 milr.; *woollen goods*, value 12,431,905; *copper* and *alloys*, value 8,220,933; *linen goods*, value 7,984,700 milr.; and *guns* and *ammunition*, value 7,040,731 milr.

(4) Alimentary Products are subdivided into food products and cattle food. The largest items are : *Wheat* (from Argentina), value 36,053,110 milr. ; *wines*, value 35,143,734 milr. ; *wheat flour* (58 per cent. from Argentina, 34 per cent. from U.S.A.), value 29,966,336 milr. ; *cod-fish* (mainly from Newfoundland and Norway), value 17,575,527 milr. ; *jerked beef*, value 14,400,531 milr. Of smaller, but still considerable values, were olive oil, butter, preserved fish, preserved milk, rice, potatoes, beer and spirits, cheese, and beans.

The chief cattle food imported was alfalfa (or lucerne), value 2,376,609 milr.

III.—Countries of Origin

The relative position of the chief countries from which imports come into Brazil remains unchanged from year to year. In 1911 the following countries sent imports of the value given—

	Milreis, paper.
Great Britain	230,541 : 951
Germany	133,274 : 169
United States	106,798 : 633
France	70,200 : 120
Argentina	60,476 : 810
Portugal	42,692 : 594
Belgium	33,104 : 014
Italy	28,957 : 116
Uruguay	16,705 : 499
Austria-Hungary	11,658 : 826
Switzerland	10,665 : 305
India	9,215 : 902
Newfoundland	8,669 : 224
Spain	7,334 : 088
Norway	6,735 : 773
Netherlands	5,094 : 915
Sweden	3,202 : 190
Canada	3,133 : 230

Other countries sent less than 1,000,000 milr. each.

IV.—Exports Analysed

The total exports for 1911 were 1,040,346 : 060$ (paper) = £69,244,982, of which—

91·2 % were of a vegetable nature
4 % ,, animals or animal products
3·5 % ,, specie or foreign bank notes, and
1·3 % ,, minerals

Deducting the specie, the exports of merchandise alone totalled 1,003,924 : 736$ (paper), *i.e.*, £66,838,892.

In order of value the exports rank as follows—

	Milreis, paper.
1. Coffee	606,530 : 824 (=£41,435,388)
2. Rubber	226,395 : 419 (=£15,093,028)
3. Maté	29,785 : 020
4. Hides	27,014 : 675
5. Cocoa	24,668 : 017
6. Cotton	14,704 : 146
7. Tobacco	14,535 : 017
8. Skins	9,729 : 956
9. Gold	7,022 : 964
10. Sugar	6,132 : 210
11. Carnauba wax	5,856 : 606
12. Bran	5,498 : 124
13. Brazil nuts	3,984 : 733
14. Manganese	3,875 : 312
15. Cotton seed	2,712 : 512
16. Bananas	2,110 : 948
17. Monazitic sand	1,666 : 559
18. Timber	1,274 : 702
19. Precious stones	979 : 436
20. Wool	934 : 158
21. Flour	829 : 696
22. Tongues	709 : 759
23. Piassava	571 : 103
24. Horsehair	451 : 458
25. Cotton waste	447 : 742
26. Horses	422 : 853
27. Glycerine	401 : 763
28. Beeswax	347 : 681
29. Rice	342 : 259
30. Lard	301 : 715
31. Ipecacuanha	227 : 015

Other articles were below the last-named value (*i.e.*, under £15,000).

The rubber was almost all "seringa"; of the other classes, "maniçoba" was the largest, "mangabeira" next, while "sorva" was exported in very small quantity. Cotton increased considerably in 1912 and 1913, while cocoa decreased, falling below tobacco. The skins were mainly of goats; the sugar chiefly Demerara and Cassonade; the flour almost entirely made from manioc.

DESTINATION

35·6%	of the	exports	were sent to	United States
15 %	,,	,,	,,	Great Britain
14·5%	,,	,,	,,	Germany
8·1%	,,	,,	,,	Holland
7·9%	,,	,,	,,	France
5·1%	,,	,,	,,	Austria-Hungary
3·9%	,,	,,	,,	Argentina
2·3%	,,	,,	,,	Belgium
1·3%	,,	,,	,,	Uruguay
1·1%	,,	,,	,,	Italy
0·9%	,,	,,	,,	Sweden

The coffee export was as follows—

	Bags.
United States	4,444,973
Germany	1,603,991
Netherlands	1,413,412
Austria-Hungary	967,677
France	874,928
Great Britain	270,114
Argentina	225,187
Italy	204,933
Other countries	1,052,587
Total	11,257,802

Of the rubber export (36,547 metric tons) about 45 per cent. went to the United States of America, another 45 per cent. to Great Britain, and most of the remainder to France.

Of the cotton export (14,647 tons), Great Britain took 10,103 tons, Portugal 2,754, Germany 531, and Spain 474.

Of the sugar export (36,208 tons), Great Britain took 23,305 tons and the United States of America, 12,260.

Of Brazil nuts, 105,423 hectolitres went to the United States of America, 23,641 to Great Britain, and 9,013 to Germany.

Of tobacco (18,489 tons), Germany took 15,779 tons; Argentina, 2,073; and Holland, 265.

Cocoa was divided among Germany, United States of America, Great Britain, France, and Holland.

Of maté (61,834 tons), Argentina took 46,500 tons; Uruguay, 12,156; and Chile, 3,057.

STATE OF ORIGIN

	Through Port of.		Milreis, paper.	%
S. Paulo	Santos	..	480,899 : 954	47·925
Rio de Janeiro ..	Rio	..	121,819 : 726	12·139
Paraná	Antonina ..	16,892 : 338	26,116 : 658	2·602
	Paranaguá ..	6,947 : 958		
	Fóz do Iguassú..	2,276 : 362		
Rio Grande do Sul	Rio Grande ..	10,288 : 345	21,630 : 333	2·155
	Porto Alegre ..	5,916 : 789		
	Pelotas	2,591 : 325		
	Quarahy	1,502 : 046		
	Itaqui	1,291 : 234		
	S. Victoria do Palmera ..	18 : 479		
	S. Borja ..	17 : 018		
	Chuy	5 : 097		
Espirito Santo ..	Victoria	..	15,115 : 312	1·507
Matto Grosso	Corumbá ..	5,950 : 952	7,940 : 969	0·790
	Porto Murtinho..	1,465 : 936		
	Nhu-Verá ..	524 : 981		
S. Catharina	S. Francisco ..	1,968 : 130	3,276 : 189	0·326
	Florianopolis ..	1,105 : 556		
	Laguna	106 : 571		
	Itajahy	95 : 532		
	Total for S. Brazil		676,799 : 141	67·444
				of the export trade of whole country.



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Santos: At the Docks

IMPORTS BY STATES

			Milreis, paper.
1. Rio de Janeiro			280,284 : 706
2. São Paulo (port of Santos)			193,202 : 704
3. Rio Grande do Sul :			
Port of Porto Alegre ..	32,203 : 940		
,, Rio Grande.. ..	22,970 : 955		
,, Pelotas	5,172 : 303		
,, Livramento ..	1,773 : 707		65,709 : 498
,, Uruguayana ..	1,710 : 187		
,, Itaqui	940 : 609		
,, Quarahy	613 : 305		
Other ports	324 : 486		
4. Paraná :			
Port of Paranaguá	11,368 : 011		
,, Antonina	1,130 : 984		12,691 : 229
,, Fóz do Iguassú ..	192 : 234		
5. Matto Grosso :			
Port of Corumbá	6,683 : 791		
,, Porto Velho ..	3,486 : 277		
,, Porto Esperança ..	299 : 287		11,034 : 915
,, Porto Murtinho ..	292 : 086		
,, Cuyabá	273 : 474		
6. Santa Catharina :			
Port of Florianopolis ..	3,827 : 541		
,, S. Francisco ..	1,770 : 651		6,563 : 131
,, Joinville	606 : 457		
,, Itajahy	358 : 482		
7. Espirito Santo (port of Victoria)			5,017 : 395

CHAPTER XVII

LIST OF TOWNS IN SOUTH BRAZIL

U. = Urban population
D. = District population

A

AFFONSO CLAUDIO, in state of Espirito Santo; lat. 19° 52′, on the R. Guandu.

AGUDOS, in state of S. Paulo; lat. 22° 20′ S.; 2,100 ft. above sea-level; pop. 8,500 (D.). Communicates by the Sorocabana Railway with S. Paulo and Santos. Produces coffee and sugar.

ALEGRETE, in state of Rio Grande do Sul; lat. 29° 47′ S.; pop. 8,000 (U.), 22,000 (D.); on R. Ivirapuytan. Communicates by railway with the state cap. Porto Alegre (594 kil.) and Uruguayana (145 k.). The town is lit by electricity. Centre of a rich agricultural district, producing maize, wheat, sugar, and rice. Hotel: *America.*

ALFENAS, in state of Minas Geraes; lat. 21° 15′ S.; 2,600 ft. above sea-level; pop. 31,000 (D.). Communicates by railway with Rio de Janeiro. Well-built town, with theatre. The district produces coffee; also cattle, pigs, and cheese.

AMPARO, in state of S. Paulo; lat. 0° 00′ O; 2,150 ft. above sea-level; pop. 35,000 (U.), 50,000 (D.). Communicates by the Mogyana Railway with S. Paulo, the state cap. (169 k.). Centre of coffee district; annual export of coffee averages 20,000,000 kilos. Hotel: *Grande.*

ANCHIETA, in state of Espirito Santo; lat. 20° 48′ S.; on R. Benevento, at mouth; pop. 8,400 (D.). Exports coffee and cereals.

ANGRA DOS REIS, in state of Rio de Janeiro; lat. 23° S.; pop. 20,000 (D.). Sea-coast town, producing coffee, cereals,

fruit, rum, and fish. Communicates by Central Railway with Rio. Hotel: *Da Silva.*

ANTONINA, in state of Paraná; lat. 25° 27′ S.; pop. 12,000 (D.); port on bay of Antonina and R. Cachoeira Communicates by Paraná railway with Curitybá and Paranaguá. Exports timber, maté, rice; the surrounding district produces sugar, rice, maize; and the town contains factories for maté and rice. (For exports, *see* "Ports and Harbours.")

ARARANGUA, in state of S. Catharina, on river of same name; lat. 29° S.; pop. 25,500 (D.). Centre of agricultural district, producing sugar, maize, mandioca, and tobacco. Coal, iron, and manganese exist in the neighbourhood. A projected railway extension will give it communication with Tubarão.

ARARAQUARA, in state of S. Paulo; lat. 21° 48′ S.; pop. 8,000 (U.), 40,000 (D.), on R. d'Ouro, trib. of R. Tieté. Junction of the Paulista and Araraquara Railways, communicating with S. Paulo (322 k.) and Ribeirão. Produces coffee, sugar, cereals, cattle. Hotel: *Mozza.*

ARASSUAHY, in state of Minas Geraes, on river of same name; lat. 17° S.; pop. 3,000 (U.), 100,000 (D.). Centre of a district producing cotton, cocoa, sugar, rice, and cereals; cattle are exported to Bahia; quantities of very high-grade iron exist; also precious stones of fine quality and great variety, including aquamarines, tourmalines, beryls, amethysts and rock crystals.

B

BAEPENDY, in state of Minas Geraes; lat. 21° 50′ S.; 2,830 ft. above sea-level; pop. 52,000 (D.). Communicates by the Minas-Rio Railway with Rio de Janeiro. Produces coffee, sugar, cocoa, cotton, and tobacco.

BAGÉ, in state of Rio Grande do Sul; lat. 31° 21′ S.; on R. Quebracho Grande; pop. 18,000 (U.) and 38,000 (D.). Communicates by the Rio Grande-Bagé Railway with the port of Rio Grande (283 k.). A fine town, lit by electricity; centre of agricultural and stock-rearing district; produces

wine, wheat, maize, alfalfa, potatoes, etc. Hotels: *Paris, Brazil, Commercio.*

BANANAL, in state of S. Paulo; lat. 22° 40′ S.; pop. 7,000 (D.). Communicates by Central Railway with S. Paulo (396 k.). Industries chiefly poultry, farming, and cheese-making.

BARBACENA, in state of Minas Geraes; lat. 21° 14′ S.; 3,000 ft. above sea-level; pop. 10,000 (U.) and 90,000 (D.). Communicates by Central Railway with Rio (378 k.). The district produces cereals, fruit, cattle, pigs. The town industries include tanning, cotton manufacture, with bacon and cheese factories; also boot-making. Hotels: *Grande, Central.*

BARRA DO PIRAHY, in state of Rio de Janeiro; lat. 22° 28′ S.; 1,840 ft. above sea-level; at confluence of rivers Parahyba and Pirahy; pop. 10,000 (U.) and 25,000 (D.). Communicates by Central Railway with Rio (109 k.); the Sapucahy Railway also runs here. Industries: agricultural machinery, tobacco, distilling, and butter-making. Hotel: *Universal.*

BARRA MANSA, in state of Rio de Janeiro; on R. Parahyba; lat. 22° 32′ S.; pop. 26,000 (D.). Communicates by W. Mines Railway with Rio Claro and other cities of Minas Geraes. Produces coffee, sugar, and cereals; iron, manganese, graphite, and other minerals are found. Hotel: *Santos.*

BATATAES, in state of S. Paulo; lat. 20° 57′ S.; pop. 4,000 (D.); 2,700 ft. above sea-level. Communicates by Mogyana Railway with S. Paulo (742 k.) and Santos. Products, coffee mainly; also maize, sugar, tobacco, beans, mandioca.

BAURÚ, in state of S. Paulo; lat. 22° 12′ S.; pop. 11,000 (D.). Communicates by Paulista and Sorocabana Railways with S. Paulo (439 k.). Products: coffee, sugar, cotton, timber, and cattle.

BELLO HORIZONTE, cap. of the state of Minas Geraes, on R. Arrudas; lat. 19° 55′ S.; 3,000 ft. above sea-level; pop. 25,000 (U.). The seat of government of Minas Geraes,

from 1711 fixed at Ouro Preto, was transferred in 1897 to the present site, formerly the village of Curral del Rey. The city has been planned on fine and spacious lines, with broad streets and boulevards. The state and municipal buildings are grouped round the Praça da Liberdade, from which the Avenida Affonso Penna runs through the city. The city buildings include the Houses of Parliament, president's palace, congress, library, post office, market, banks, schools, clubs, and two theatres. It possesses electric tramways and lighting. In the public park a model farm has been instituted to illustrate and investigate the scientific cultivation of the products of the country. Textile and other manufactures have been established, and there are five agricultural colonies in the neighbourhood. Living is cheap. Hotels: *Grande, Globe, Commercio.*

BIGUASSU, in the state of S. Catharina, on river of same name; lat. 27° 29′ S.; pop. 17,500 (D.). Products: agricultural, including coffee, mandioca, rice, sugar, and tobacco.

BLUMENAU, in state of S. Catharina, near R. Itajahy-Assu; lat. 26° 57′ S.; pop. 9,000 (U.). A flourishing German agricultural colony, named after its founder; produces cereals, maize, sugar, fruit, vegetables, etc. Communicates by local railway, road, and river with port of Itajahy.

BOM SUCCESSO, in state of Minas Geraes, on R. das Mortes; lat. 22° 55′ S.; 2,750 ft. above sea-level; pop. 28,000 (D.). Communicates by the W. Minas Railway with Rio de Janeiro. Products, agricultural and starch; iron, gold, and platinum are found in the district.

BOTUCATÚ, in state of S. Paulo; lat. 22° 55′ S.; pop. 6,000 (U.) and 32,000 (D.). Communicates by Sorocabana Railway with S. Paulo (308 k.) and Santo. Has electric lighting. Products: coffee, sugar, tobacco; cattle and hides. Hotel: *Villeta.*

BRUSQUE, in state of S. Catharina, on R. Itajahy-merim; lat. 27° 5′ S.; pop. 15,000 (D.). Products agricultural, including maize, rice, coffee, sugar, tobacco. Lime is found in the district.

CABO FRIO, a port of the state of Rio de Janeiro, near the cape of the same name ; lat. 22° 55′ S. Has 8,000 inhabitants, and is a manufacturing town ; produces salt, preserved fish, etc.

CAÇAPAVA, in state of Rio Grande do Sul, on R. Santa Barbara ; lat. 30° 28′ S. ; 1,800 ft. above sea-level ; pop. 18,000 (D.). In addition to agricultural products (wheat, maize, tobacco), copper is worked, and gold and iron are also found in the neighbourhood. Hotel : *Viajantes.*

CACHOEIRA, in state of Rio Grande do Sul, on R. Jacuhy ; lat. 30° 3′ S. ; pop. 45,000 (D.). Communicates by Uruguayana Railway with Porto Alegre (147 k.) and Uruguayana (488 k.). A progressive town, with theatre, electric lighting, etc. Large quantities of rice and cereals are grown ; there is also a meat-preserving factory near the town. Hotel : *Alliança.*

CACHOEIRO DE ITAPEMIRIM, in state of Espirito Santo, on R. Itapemirim ; lat. 20° 51′ S. ; pop. 3,000 (U.) and 24,000 (D.). Communicates by Leopoldina Railway with Rio. Products : coffee, cotton, cereals. Hotels : *Machedo* and *Serpa.*

CAETHÉ, in state of Minas Geraes ; lat. 19° 53′ S. ; 3,025 ft. above sea-level. On Central Railway. Has manufactures of textiles and pottery.

CALDAS, POCOS DE, in state of Minas Geraes ; lat. 21° 48′ S. on R. Capipary, 3,900 ft. above sea-level ; pop. 7,000 (U.) and 21,800 (D.). The Central Railway project a branch from Ouro Fino, thus connecting Caldas with Rio (582 k.). Produces wine and coffee. There are thermal springs here. Hotels : *Globo* and *Sul.*

CAMPINAS, in state of S. Paulo ; lat. 22° 58′ S. ; 2,250 ft. above sea-level ; pop. 45,000 (U.) and 90,000 (D.). An important western city, with good water supply, sewerage, electric light, etc. Communicates by Mogyana Railway with S. Paulo (105 k.) and by many branch lines with coffee-growing districts, for which it is a centre. The city has a cathedral and fine municipal and other buildings, and the

railway workshops are established here. It is also known as a centre of education and culture. Several agricultural colonies are planted in the neighbourhood. Hotel: *Villela.*

CAMPO ALEGRE, in state of S. Catharina, near the R. Negro; lat. 26° 12′ S.; pop. 6,500 (D.). The town is 23 k. from S. Bento, on the S. Francisco Railway. Produces timber; coal and iron are found in the vicinity.

CAMPO LARGO, in state of Paraná; lat. 25° 32′ S.; pop. 14,000 (D.). Produces maté, timber, and cereals.

CAMPOS, on R. Parahyba, in the state of Rio de Janeiro; lat. 21° 45′ S.; pop. 30,000 (U.) and 110,000 (D.). Communicates by Leopoldina Railway with Rio, and by Carangola Railway with S. Antonio (168 k.). A well-built city, on both sides of the river, connected by a bridge, with municipal buildings, hospital, and good services of trams, river steamers, lighting, and sanitation. Seat of sugar-refining (twenty-seven factories) and fruit-preserving. Hotel: *Flavia.*

CAMPOS NOVOS DE PARAPANEMA, in state of S. Paulo; lat. 22° 27′ S.; pop. 16,000 (D.). Communicates by the Sorocabana Railway with S. Paulo and Santos. Produces sugar, coffee, rice, mandioca, and tobacco; manufactures alcohol.

CANANEA, in state of S. Paulo; lat. 25° S.; pop. 9,000 (D.). Ancient town, on island of Cananea, one of the first Portuguese settlements in Brazil. Produces rice, cereals, and coffee.

CANTAGALLO, in state of Rio de Janeiro, on R. Negro; lat. 21° 58′ S.; pop. 36,000 (D.). Communicates by the Leopoldina Railway with the state cap., Nictheroy (179 k.). Produces coffee and sugar.

CAPIVARY, in state of Rio de Janeiro; lat. 22° 40′ S. Capivary is a town of 5,000 inhabitants and a sugar-growing centre; on Nictheroy-Macahe Railway.

CARANGOLA, in state of Minas Geraes, on R. Carangola; lat. 20° 43′ S.; pop. 40,000 (D.). Produces coffee, cereals, cattle, and timber.

CASTRO, in state of Paraná, on R. Japo ; lat. 24° 47′ S. ; 3,050 ft. above sea-level ; pop. 13,000 (D.). Communicates by the S. Paulo-Rio Grande Railway with Curitybá. Produces cereals, cotton, cattle, maté, and pinewood. Hotel : *Beimel.*

CATAGUAZES, in state of Minas Geraes, on R. Pomba ; lat. 21° 25′ S. ; pop. 42,000 (D.). Communicates by Leopoldina Railway with Porto Novo (105 k.). Has theatre, electric light, etc. Produces coffee, cereals, and tobacco. Hotel : *Villas.*

CAXAMBÚ, in state of Minas Geraes ; lat. 22° 7′ S. ; pop. 800 (U.). Communicates by the Sapucahy Railway with Itajuba. Is an invalid resort, with thermal springs. Hotels : *Palace, Caxambú,* and *Grande.*

CAXIAS, in state of Rio Grande do Sul ; lat. 29° 5′ S. ; pop. 35,000 (D.). Produces wine and cereals. It is proposed to build a branch of the Uruguayana to this place.

CHRISTINA, in state of Minas Geraes ; lat. 21° 15′ S. ; pop. 1,500 (U.) and 30,000 (D.). Communicates by Sapucahy Railway with Itajuba. Produces cotton and cattle.

CONCEIÇÃO DA BARRA, in state of Espirito Santo ; lat. 18° 36′ S. ; pop. 7,500 (D.) ; on R. Itaunas. Produces coffee, cotton, sugar, and cereals.

CONCEIÇÃO DO ARROIO, in state of Rio Grande do Sul ; lat. 29° 58′ S. ; pop. 14,000 (D.). The Uruguayana Railway proposes to run a branch line here from S. Leopoldo. Produces sugar, alcohol, wheat, rice, hides, and dried fish.

CORDISBURGO, in state of Minas Geraes ; lat. 17° 40′ S. On the Central Railway near Pirapora ; a growing and thriving agricultural centre ; 4,000 people.

CRUZ ALTA, in state of Rio Grande do Sul ; lat. 28° 30′ S. A town of 7,000 inhabitants in the N. of the state, 310 m. from Porto Alegre to which it is joined by the Rio Grande Railway. Produces cattle and cereals.

CURITYBÁ, cap. of the state of Paraná ; lat. 25° 28′ S. ; 2,900 ft. above sea-level ; pop. 50,000 (U.). Communicates

by the Pananá Railway with Ponta Grosso (191 k.) and with Paranaguá. A fine city, planned, like Bello Horizonte, as a new state cap., with wide streets, boulevards, and squares. Has government offices, Houses of Parliament, cavalry barracks, museum, schools, asylum, clubs, etc. ; also a cathedral, built in imitation of Barcelona Cathedral. Electric lighting and tramways and good sanitation. There is a large foreign population, and a resident British Consul. Industries include maté and cotton textiles ; in the neighbourhood is a large match factory. The large dairy products from the agricultural colonies in the vicinity tend to make the cost of living exceptionally low. Hotels : *Grande* and *Roma.*

CURRALINHO, in state of Minas Geraes ; lat. 18° 20′ S. ; a town of 5,000 inhabitants on the Central Railway, between Pirapora and Bello Horizonte. The point from which the coach to Diamantina and the diamond fields starts.

CURVELLO, in state of Minas Geraes, on R. Riacho ; lat. 18° 35′ S. ; pop. 8,000 (U.) and 60,000 (D.). Communicates by the Central Railway with Rio (798 k.). Well-built town, with good water supply, and acetylene lighting. Copper and potter's clay are found in the neighbourhood, and the forests supply timber and rubber. Agricultural products are rice, mandioca, sugar, tobacco, coffee, with cattle and hides.

D

DIAMANTINA, in state of Minas Geraes ; lat. 18° 17′ S. ; 3,700 ft. above sea-level ; pop. 15,000 (U.) and 59,000 (D.). Flourishing manufacturing town, with factories for cotton textiles, tanning, boots and shoes, and cheese. The neighbourhood is rich in gold, iron, and diamonds, and the town is a centre of diamond-cutting. Communicates by mule-train with Rio das Velhas. An electric line in course of construction is to connect Diamantina with the port of Victoria in Espirito Santo ; this will doubtless enhance the prosperity of the town, which has suffered from inadequate means of transport.

DOURADO, in state of S. Paulo, on R. Jacare Pihita ; lat. 22° 7′ S. ; pop. 12,000 (D.). Communicates by the Dourado

Railway with S. Paulo and Santos. Centre of a great coffee district, producing 16,000,000 lbs. yearly.

E

ENCRUZILHADA, in state of Rio Grande do Sul, on R. Pequary; lat. 30° 34′ S.; pop. 20,000 (D.). Produces cereals and tobacco.

ENTRE RIOS, in state of Minas Geraes; lat. 20° 50′ S.; pop. 12,000 (U.) and 43,000 (D.). Communicates by Central and Leopoldina Railways with Rio (198 k.). Produces cereals and cattle; manganese occurs abundantly in the district. Hotel: *Franklin.*

F

FAXINA, in state of S. Paulo, on R. Verde; lat. 24° 3′ S.; pop. 15,000 (D.). Communicates by the S. Paulo-Rio Grande Railway with S. Paulo (250 k.) and Santos. Products: coffee, cotton, sugar, tobacco, cereals; also sheep and wool. Gold, diamonds, and lead are found in the district.

FLORIANOPOLIS, cap. of the state of Santa Catharina, on island of S. Catharina; lat. 27° 35′ S.; pop. 30,000 (U.) and 50,000 (D.). A well-built city, with good harbour works. In addition to the usual government buildings, it possesses a cathedral, library, museum, theatre, market, etc. Formerly known as Nossa Senhora do Desterro. Exports: rice, maize, tobacco, cereals, flour, mandioca; imports general merchandise. Hotels: *Grande* and *Commercio.*

FORMIGA, in state of Minas Geraes, on R. Lambary; lat. 20° 39′ S.; pop. 7,000 (U.) and 25,000 (D.). Communicates by the W. Minas Railway with Rio. Good lighting (electric) and water supply. Products: coffee, cereals, sugar, cattle, cheese, and timber. Hotels: *Garcia* and *Commercio.*

G

GRÃO MOGUL, in state of Minas Geraes, on R. Itacambirussu; lat. 16° 40′ S.; pop. 96,000 (D.). Centre of a rich mineral district, producing diamonds, iron, and also timber.

GUARAPARY, in state of Espirito Santo, at mouth of R. Guarapary; lat. 20° 38′ S.; pop. 8,000 (D.). Exports coffee, cereals, and sugar.

GUARAPUAVA, in state of Paraná; lat. 25° 19′ S.; 3,560 ft. above sea-level; pop. 30,000 (D.). Communicates by S. Paulo-Rio Grande Railway with Curitybá. Produces maté, cereals, cattle, and pine timber.

GUARATINGUETÁ, in state of S. Paulo, on R. Parahyba; lat. 22° 52′ S.; pop. 9,000 (U.) and 48,500 (D.). Communicates by the Central Railway with S. Paulo (201 k.) and Rio (295 k.). Produces coffee, sugar, and maize.

I

IGUAPE, seaport in state of S. Paulo, on R. Mar Pequeno; lat. 24° 41′ S.; pop. 3,500 (U.) and 21,400 (D.); 320 k. from S. Paulo. Exports rice, coffee, sugar; also cattle and hides.

IMBETIBA, in state of Rio de Janeiro; lat. 22° 25′ S.; a port of 6,000 inhabitants connected with Macahe by the Macahe Railway. Has an important export trade of sugar, rice, and coffee.

ITABIRA DE MATTO DENTRO, in state of Minas Geraes; lat. 19° 48′ S.; pop. 38,000 (D.). Communicates by road with Caethé (60 k.), and thence by Central Railway with Rio. A well-built, electric-lighted, manufacturing town; produces cotton textiles and straw hats; coffee, sugar, and cereals are grown, and gold and iron is found in the neighbourhood.

ITABORAHI, in state of Rio de Janeiro; lat. 22° 45′ S.; a town of 4,000 inhabitants; sugar and cereals.

ITAJAHY, in state of S. Catharina, port near mouth of R. Itajahy; lat. 26° 57′ S.; pop. 27,000 (D.). Exports the sugar, rice, coffee, timber and other products of the valley. There are deposits of molybdenum, manganese, iron, and mercury in the district. Hotel: *Central.*

ITAPEMIRIM, in state of Espirito Santo, seaport at mouth of R. Itapemirim; lat. 20° 58′ S.; pop. 13,000 (D.).

Communicates by Leopoldina Railway with Campos and Rio. Exports coffee, sugar, and cereals.

ITAPIRA, in state of S. Paulo, on R. do Peixe ; lat. 22° 28′ S. ; pop. 20,000 (D.). Communicates by the Sapocahy Railway with S. Paulo and Santos. Produces annually about 20,000,000 lbs. of coffee.

ITAQUY, in state of Rio Grande do Sul, river port in the W. of the state, on the upper Uruguay ; lat. 29° 7′ S. ; pop. 7,000 (U.) and 20,000 (D.). Communicates by the Itaquy-Quarahy Railway with Uruguayana (99 k.), and Rio Grande (644 k.). Important manufacturing and distributing centre. Agricultural products of district include maize, rice, sugar, cereals, and cattle ; flour, sugar, alcohol, and cotton are manufactured.

ITÚ, in state of S. Paulo, on R. Tieté ; lat. 23° 20′ S. ; pop. 9,000 (U.) and 25,000 (D.). Communicates by Sorocabana Railway with S. Paulo and Santos. Coffee, cotton, sugar, and tobacco are grown in the district, and coffee, sugar, and cotton textiles are manufactured in the town.

ITUVERAVA, in state of S. Paulo, on R. Caimo ; lat. 20° 24′ S. ; pop. 10,000 (D.). Communicates by Mogyana Railway with S. Paulo (417 k.) and Santos. Produces coffee, sugar, and cattle.

J

JACAREHY, in state of S. Paulo, on R. Parahyba ; lat. 23° 17′ S. ; 1,825 ft. above sea-level ; pop. 20,000 (D.). Communicates by the Central Railway with S. Paulo (92 k.) and with Rio.

JACARESINHO, in state of Paraná, on R. Ourinho ; lat. 24° S. ; pop. 12,500 (D.). Produces coffee, sugar, and cereals ; marble quarries and iron deposits in the district.

JAGUARÃO, in state of Rio Grande do Sul ; on R. Jagua rão ; lat. 32° 34′ S. ; pop. 18,000 (D.). Town on the Uruguay border ; produces wine and fruit. Hotels : *Biot* and *Francez.*

JANUARIA, in state of Minas Geraes, on R. São Francisco ;

lat. 15° 32′ S. ; pop. 12,000 (U.) and 50,000 (D.). Communicates by river with Pirapora and Joazeiro, the terminus of the Bahia-S. Francisco Railway. The Central Railway propose an extension to this town. Products : cereals, hides, and cattle ; timber forests in the neighbourhood.

JOINVILLE, in state of S. Catharina, at mouth of R. Cachocira ; lat. 26° 18′ S. ; pop. 25,500 (D.). Communicates by railway with S. Francisco (10 k.). Industrial town, producing maté, furniture, boats, nails, etc.

JUIZ DE FORA, in state of Minas Geraes, on R. Parahybana ; lat. 21° 48′ S. ; 2,170 ft. above sea-level ; pop. 30,000 (U.) and 127,000 (D.). Communicates by the Central Railway with Rio (275 k.). Active industrial town, with chamber of commerce, banks, colleges, theatres, electric tramways, and lighting ; manufactories of cotton, jute, soap, candles, beer, etc. The district produces coffee, sugar, cotton, tobacco, cereals, and cattle. Hotels : *Grande, Central,* and *Renaissance.*

JUNDIAHY, in state of S. Paulo, on R. Jundiahy ; lat. 23° 12′ S. ; pop. 16,000 (U.) and 25,000 (D.). Communicates by S. Paulo Railway (of which it is the western terminus) with S. Paulo (60 k.) and Santos. Industrial town, with engineering shops of the Paulista Railway and manufactures of cotton and agricultural machinery. Good municipal buildings, lighting, sewerage. Hotel : *Stadt Hamburgo.*

L

LAGES, in state of S. Catharina, lat. 27° 46′ S. ; 2,600 ft. above sea-level ; pop. 26,000 (D.). Centre of agricultural district. Products : cereals, vegetables, fruit, with cattle, and horses.

LAGUNA, in state of S. Catharina ; lat. 28° 29′ S. ; pop. 34,000 (D.). Communicates with Tubarão by the Therzea-Christina Railway, and with Rio by coasting steamers. Exports maize, sugar, alcohol, rice, flour, fish, together with coal from Tubarão.

LAPA, in state of Paraná ; lat. 25° 51′ S. ; 2,950 ft. above

sea-level; pop. 9,000 (U.) and 30,000 (D.). Communicates by Paraná Railway with Curitybá. Produces about 16,000,000 lbs. of maté per annum.

LAVRAS, (1) in state of Minas Geraes; lat. 21° 25′ S.; pop. 50,000 (D.); 2,950 ft. above sea-level; on a branch of the W. Minas Railway. Produces cattle, pigs, and cheese; formerly gold was extensively mined in the district. (2) in state of Rio Grande do Sul; lat. 30° 47′ S.; pop. 9,000 (D.). Exports cattle to Bagé for the jerked beef industry; gold mines in neighbourhood.

LENÇÕES, in state of S. Paulo, on R. Lenções; lat. 22° 37′ S.; pop. 13,500 (D.). Communicates by Sorocabana Railway with S. Paulo and Santos. Products: coffee and sugar.

LEOPOLDINA, in state of Minas Geraes; lat. 21° 35′ S.; pop. 3,000 (U.) and 35,000 (D.). Communicates by Leopoldina Railway with Rio. Good water and electric lighting. Produces coffee, sugar, tobacco, and cereals.

LIMEIRA. (S. Paulo.)

LINHARES, in state of Espirito Santo, on R. Doce; lat. 19° 21′ S.; pop. 14,000 (D.). Centre of an agricultural district with several colonies, producing coffee, cocoa, sugar, rice, and cereals.

LIVRAMENTO, in state of Rio Grande do Sul, on R. Ibicuhy du Armado; lat. 30° 53′ S.; pop. 9,000 (U.) and 39,000 (D.). Communicates by a branch of the Uruguayana Railway with Porto Alegre (600 k.). Good water supply and electric lighting. Centre of great grazing district for cattle and sheep; coal and iron are found in the neighbourhood. Hotels: *Pinto* and *Correa.*

LORENA, in state of S. Paulo; lat. 23° S.; pop. 8,000 (U.) and 25,000 (D.), on R. Parahyba. Communicates by Central Railway with S. Paulo (216 k.) and Rio (280 k.). Manufactures coffee, sugar, and alcohol; rice, maize, and mandioca also are grown in the district. Hotel: *Paiva.*

M

MACAHE, in state of Rio de Janeiro ; lat. 22° 24′ S. ; seaport at mouth of R. Macahe ; pop. 8,000 (U.) and 51,000 (D.). Communicates by Leopoldina Railway with Nictheroy and with Campos ; a canal is also being made to Campos. Manufactures and exports sugar.

MANGARATIBA, in state of Rio de Janeiro ; lat. 22° 58′ S. ; pop. 9,000 (D.). Fishing port. The district produces sugar and cereals.

MAR DE (H)ESPANHA, in state of Minas Geraes ; lat. 21° 58′ S. ; pop. 48,000 (D.). War station of São Pedro on Leopoldina Railway. Chief product, coffee.

MINAS, in state of Santa Catharina. A small town of no present importance, but has mines of coal which promise so well that it will one day be an important centre of industry.

MINAS NOVAS, in state of Minas Geraes ; lat. 17° 32′ S. ; pop. 102,000 (D.) ; 3,000 ft. above sea-level. Produces cotton and sugar ; gold and precious stones are found in the neighbourhood.

MOGY DAS CRUZES, in state of S. Paulo ; lat. 23° 33′ S. ; pop. 30,000 (D.). Communicates by Central Railway with S. Paulo (49 k.) and with Rio. Products : coffee, maize, sugar, rice, mandioca, and cereals.

MONTENEGRO. *See* São João de Montenegro.

MONTES CLAROS, in state of Minas Geraes ; lat. 16° 50′ S. ; pop. 6,000 (U.) and 70,000 (D.). Not at present on the railway, but the Central Railway is extending towards it. Cotton, sugar, and cereals are grown, and gold, silver, copper, and precious stones exist in the neighbourhood.

MORETTES, in state of Paraná ; lat. 25° 32′ S. A town on the R. Nhumfiaquara, 10 m. from the port of Antonina, with which it is connected by rail. Is peopled by Italians, Germans, and Poles, who have large plantations of bananas and other tropical fruit ; also a fishing centre.

MUNIZ FREIRE, in state of Espirito Santo ; lat. 20° 22′ S., on the R. Itapemirim.

N

NICTHEROY, cap. of the state of Rio de Janeiro, on the Bay of Rio, opposite the city of Rio ; lat. 22° 53′ S. Communicates by the Leopoldina Railway with Petropolis and the interior of the state ; and with Rio by steamer. An attractive residential city, divided into the three districts of São Domingo, Praia Grande, and São Lourenzo. Among its industries is powder manufacturing. Hotel : *Soares.*

NOVA TRENTO, in state of S. Catharina ; lat. 27° 10′ S. ; pop. 8,000 (D.). Centre of agricultural district.

NOVO FRIBURGO, in state of Rio de Janeiro ; lat. 22° 17′ S. ; pop. 20,000 (U.). Communicates with Campos by the Leopoldina Railway. A flourishing city, formerly a German and Swiss colony, founded by the Swiss Guards of Dom Pedro. Hotel : *Grande.*

NUPORANGA, in state of S. Paulo, on R. Sapucahymirim ; lat. 21° 32′ S. ; pop. 8,000 (D.). Produces coffee, sugar, rum, and cattle.

O

OURO PRETO, or **VILLA RICA DE OURO PRETO**, in state of Minas Geraes, on R. Funil ; lat. 20° 30′ S. ; 3,900 ft. above sea-level ; pop. 14,000 (U.). Communicates by branch of Central Railway with Rio and with Bello Horizonte. Till 1897 cap. of the state, a position now held by Bello Horizonte. At one time it had a population of 60,000, largely based on the gold industry ; the mines, still in operation, are not now so important. Precious stones are also found, especially topazes. The town possesses a state gymnasium or high school, with schools of mining and of medicine. Hotel : *Grande.*

P

PALHOCA, in state of S. Catharina, on the island of S. Catharina ; lat. 27° 38′ S. ; pop. 4,500 (U.) and 22,000 (D.).

Produces and exports timber. In the vicinity is the well-known watering-place of Caldas, with thermal springs.

PALMEIRA, in state of Paraná; lat. 25° 26′ S.; pop. 13,000 (D.). Communicates by Paraná Railway with Curitybá. Products: maté, maize, cereals, tobacco, and wine. Hotel: *Ristow.*

PALMYRA, in state of Minas Geraes; lat. 21° 30′ S.; 2,725 ft. above sea-level; pop. 11,000 (D.). Communicates by Central Railway with Rio (324 k.). Produces cereals, cheese, and cattle.

PARACATU, in state of Minas Geraes, on R. Paracatu; lat. 17° 28′ S.; pop. 60,000 (D.). Centre of large gold-mining district.

PARAHYBA DO SUL, in state of Rio de Janeiro, on R. Parahyba; lat. 22° 9′ S.; pop. 39,000 (D.). Communicates by Central Railway with Rio (188 k.). Produces coffee, sugar, and cereals.

PARANAGUÁ, in state of Paraná; seaport on bay of Antonina; lat. 25° 23′ S.; pop. 9,000 (U.) and 18,000 (D.). Communicates by Paraná Railway with Curitybá (111 k.). Principal port of the state (*see* "Ports and Harbours"). Exports large quantities of maté. Hotels: *Zanchetta* and *Brasil.*

PARATY, in state of Rio de Janeiro, on the E.; lat. 23° 12′ S.; pop. 12,000 (D.). Produces sugar, cereals, and fish.

PASSO FUNDO, in state of Rio Grande do Sul; lat. 28° 12′ S.; pop. 3,000 (U.) and 30,000 (D.); 2,270 ft. above sea-level. Communicates by S. Maria Railway with S. Maria (355 k.) and Porto Alegre. Products: cattle, maté, timber, tobacco. Hotel: *Internacional.*

PAU GIGANTE, in state of Espirito Santo; lat. 19° 52′ S.; pop. 6,000 (D.). Communicates by Diamantina Railway with Victoria (81 k.). Chief product, coffee.

PELOTAS, in state of Rio Grande do Sul, on the Lagoa dos Patos; lat. 31° 48′ S.; pop. 32,000 (U.) and 60,000 (D.). Communicates by the Rio Grande-Bagé Railway with Rio

Grande (65 k.). The second city in the state, with electric trams, lighting, etc. In the district are numerous agricultural colonies, producing tobacco, maize, cereals, etc.; large herds of cattle are kept. The main industry and export is jerked beef (*xarque*). (*See also* "Ports and Harbours.") Hotels: *Alliança* and *Brasil.*

PETROPOLIS, in state of Rio de Janeiro; lat. 22° 32′ S.; 2,430 ft. above sea-level; pop. 30,000 (U.) and 50,000 (D.). Communicates by Leopoldina Railway with Rio. Residential city, formerly the seat of the Imperial Court; contains municipal palace, forum, hospital, and other fine buildings. Most of the foreign diplomatists reside here. Cotton, silk, tobacco, hat, and shoe factories are established, with large breweries.

PINDAMONHANGABA, in state of S. Paulo, on R. Parahyba; lat. 22° 58′ S.; pop. 14,000 (U.) and 20,000 (D.). Communicates by Central Railway with S. Paulo (171 k.), and with Rio. Modern manufacturing city with fine climate and large botanical gardens. Products: coffee, sugar, and maize.

PIRACICABÁ, in state of S. Paulo, on R. Piracicabá; lat. 22° 43′ S.; pop. 16,000 (U.) and 40,000 (D.). Communicates by Sorocabana Railway with S. Paulo (196 k.). Manufacturing town in fine climate. Contains sanatorium, schools, and agricultural college; also cotton, sugar, and coffee factories, and distilleries. The district grows sugar, coffee, cotton, tobacco, mandioca, and other crops.

PIRAHY, in state of Paraná, on R. Pirahy; lat. 24° 31′ S.; pop. 7,000 (D.). Communicates by S. Paulo-Rio Grande Railway with Curitybá. Produces coffee, sugar, and cattle. The district contains mineral springs and iron.

PIRAPORA, in state of Minas Geraes; on the R. São Francisco and end of the navigable reach of the upper river; lat. 17° 20′ S. Is also the terminus of the Central Railway line which unites it to Bello Horizonte and to Rio de Janeiro. Pop. 7,000. Has cotton mills, and centre of an agricultural and pastoral district.

PITANGUY, in state of Minas Geraes, on R. Conceição de

Pará ; lat. 19° 49′ S. ; pop. 35,000 (D.). Communicates by W. Minas Railway with Rio. Produces coffee, cereals, and cattle.

POMBA QUELUZ. *See* Queluz.

PONTA GROSSA, in state of Paraná ; lat. 25° 6′ S. ; 2,935 ft. above sea-level ; pop. 10,000 (U.). Communicates by S. Paulo-Rio Grande Railway with Curitybá (191 k.) and Iterare, on the S. Paulo boundary (252 k.). Railway junction with the engineering shops and headquarters of the above-named railway ; many roads also converge here. Products : cereals, maté, pine timber, sugar, tobacco, cattle, jerked beef, and cheese. Hotels : *Bindo* and *Palermo.*

PONTE DE ITABEPUANA, in state of Espirito Santo, on R. Itabepuana ; lat. 21° 13′ S. ; pop. 3,000 (D.). Communicates by Leopoldina Railway with Rio. Produces coffee, sugar, maize, and rice.

PONTE NOVAS, in state of Minas Geraes ; lat. 20° 19′ S. ; on R. Doce ; pop. 57,000 (D.). Communicates by Leopoldina Railway with Rio. Produces coffee, sugar, cereals, and cattle.

PORTE MAXARENHAS, in the state of Espirito Santo, on the R. Doce ; lat. 19° 42′ S. Connected by the Victoria and Minas Railway with Victoria.

PORTO ALEGRE, cap. of the state of Rio Grande do Sul, on R. Guahyba, at N. end of Lagoa dos Patos ; lat. 30° 2′ S. ; pop. 120,000 (U.). Communicates by Brazilian Railway with Uruguayana, Bagé, Rio Grande, and the other important towns of the state. The largest town in S. Brazil, and an important commercial and industrial centre, with cosmopolitan population ; the chief street is the Rua des Andradas. Contains presidential and municipal palaces, university, engineering and military colleges, theatres, hospitals, clubs, and fine shops and parks. Steamers ascend the river to Triumpho and Santo Amaro, and down the lake to Rio Grande (288 k.). Wireless telegraph communication with Rio Grande. Chief exports : hides, jerked beef, lard, tobacco,

and mandioca flour. (*See also* "Ports and Harbours.") Hotels: *Brasil, Central,* and *Becker.*

PORTO BELLO, in state of S. Catharina, on the coast; lat. 27° 11′ S.; pop. 8,000 (D.). Exports: coffee, sugar, rice, bananas, and timber.

PORTO DA UNIÃO, in state of Santa Catharina; lat. 26° 15′ S.; a town on the R. Iguassú and an important railway junction. Border station of the Rio Grande and São Paulo Railway. Pop. 6,000.

POUSO ALEGRE, in state of Minas Geraes; lat. 22° 14′ S.; pop. 50,000 (D.). Communicates by Sapucahy Railway with Rio. Contains fine cathedral; also municipal theatre. Centre of fertile district, producing coffee, sugar, tobacco, cereals, cattle, and cheese. Hotel: *Abreu.*

Q

QUARAHY, in state of Rio Grande do Sul, on R. Quarahy; lat. 30° 40′ S.; pop. 8,000 (U.) and 24,000 (D.). Communicates by Brazilian Great Southern and Uruguayana Railways with Porto Alegre (522 k.). Centre, second only to Pelotas, of the jerked beef industry of the state, and has a great beef-drying factory. Large herds of cattle are pastured in the neighbourhood. Exports (chiefly to Uruguay): jerked beef, hides, horns, and wool.

QUELUZ, in state of Minas Geraes, on R. Pomba, lat. 21° 7′ S.; 3,250 ft. above sea-level; pop. 48,000 (D.). Communicates by Leopoldina Railway with Rio. Produces coffee and tobacco. Hotels: *Moura* and *Haya.*

R

REZENDE, in state of Rio de Janeiro, on R. Parahyba; lat. 22° 28′ S.; pop. 14,000 (U.) and 28,000 (D.). Communicates by Central Railway with Rio (190 k.). Centre of dairying and stock-breeding district; chief products, cattle, butter, and cheese.

RIBEIRÃO BONITO, in state of S. Paulo, on R. Bonito; lat. 22° 12′ S.; pop. 14,000 (D.). Communicates by Dourado

Railway with S. Paulo (311 k.) and Santos. Produces coffee and cattle.

RIBEIRÃO CLARO, in state of Paraná, on R. Iterare ; lat. 23° 56′ S. ; pop. 8,000 (D.). Cattle-rearing district, with coal and lime deposits.

RIBEIRÃO PRETO, in state of S. Paulo, on R. Preto ; lat. 21° 11′ S. ; pop. 28,000 (U.) and 72,000 (D.). Communicates by Mogyana Railway with S. Paulo (423 k.) and Santos. The most important city in N. São Paulo, and centre of a coffee-growing district. Modern town, with many Italian inhabitants, well supplied with water, electric light, etc. Contains cathedral, forum, theatre, and good school, with coffee and other factories. Hotels : *Fonseca* and *Simães.*

RIO CLARO, (1) in state of Rio de Janeiro ; lat. 22° 48′ S. ; pop. 10,000 (D.). Communicates by W. Minas Railway with Barra Mansa, and with towns in Minas Geraes. Chief products : coffee, sugar, and cereals. (2) In state of S. Paulo, on R. Claro ; lat. 22° 25′ S. ; 2,130 ft. above sea-level ; pop. 8,000 (U.) and 40,000 (D.). Communicates by Paulista Railway with S. Paulo (116 k.) and Santos. Healthy town, with good water supply, sewerage, and lighting. Chief products : coffee and sugar.

RIO DE JANEIRO, in state of Rio de Janeiro, on Bay of Rio ; cap. of Brazil, and ranking with Buenos Aires as one of the two leading cities of S. America ; pop. nearly 1,000,000. The harbour is one of the finest and most beautiful in the world. The city is built between the sea and the Corcovado range of mountains. Communicates by the Central Railway with S. Paulo and the south, and so with Monte Video, and by the Leopoldina Railway with N. Brazil. It is thus the centre both of the internal and the external commerce of the country. The finest streets are the Avenida Beira Mar, along the sea-front ; the Avenida Central, running N. and S. ; and the Rua de Marco, the chief business thoroughfare, parallel with the Avenida Central. On the W. side lies the chief square, the Praça de Republica, with the Senate House, the Prefecture, the Ministry of War, the Stock Exchange, and other fine buildings. Among the notable features of the city are the

cathedral and church of Nossa Senhora de Gloria, the Municipal Theatre, the Monroe Palace, and the botanical gardens (12 k.). Excellent tramway service and sanitation. The suburb of Tijuca, 3,220 ft. above sea-level, with magnificent prospect, forms an excursion well worth making. Among the varied industries are cotton and jute mills, woollen textiles, match-making, hat, boot and shoe factories. Living is very expensive. (For the exports and imports, *see under* "Ports and Harbours.") Among the principal hotels are *Allen's*, *America*, *Avenida*, *Grande*, *Globo*, *Internacional*, and *Metropole*, with the *Tijuca* at Tijuca.

RIO GRANDE, in state of Rio Grande do Sul, at mouth of the Lagoa dos Patos ; lat. 32° 1′ S. ; pop. 40,000 (U.). Communicates by the Rio Grande-Bagé Railway with Bagé, S. Maria, Uruguayana, and Porto Alegre, and by steamer with Porto Alegre. A prosperous seaport, hampered by a shifting sand-bar, which is now being removed. Possesses cathedral, municipal buildings, schools, theatre, electric tramways and lighting, etc. The industries include textiles, flour-making, jerked beef, tobacco and matches, boots and shoes, breweries, etc. British and American Consuls in residence. (For harbour and trade, *see* "Ports and Harbours.") Hotels : *Paris*, *Grande*, and *Germania*.

RIO NEGRO, in state of Paraná, on R. Negro ; lat. 26° 8′ S. ; pop. 17,000 (D.). Communicates by Paraná Railway with Curityba, and by steamboat service with União de Victoria. Exports maté, maize, beans, and timber.

RIO PARDO, SÃO JOSÉ DE, in state of S. Paulo, on R. Pardo ; lat. 21° 38′ S. ; pop. 6,000 (U.) and 40,000 (D.). Communicates by Mogyana Railway with S. Paulo and Santos. An active city, engaged in the preparation of coffee and rice ; sugar, tobacco, and cotton are also grown in the district.

S

SABARA, in state of Minas Geraes ; lat. 19° 47′ S. ; communicates by Central Railway with Parahyba and Rio.

SANTA BARBARA, in state of Minas Geraes, on R. Santa Barbara ; lat. 20° S. ; pop. 80,000 (D.). On line of projected

extension of Central Railway from Itabira to Bello Horizonte. Products: cereals, timber, cattle, and gold.

SANTA CRUZ, in state of Rio Grande do Sul, on R. Tailho; lat. 29° 43′ S.; pop. 3,000 (U.), and 30,000 (D.). Communicates by branch of Uruguayana Railway with Porto Alegre. Centre of an agricultural district, producing maté, rice, tobacco, lard, and beans.

SANTA MARIA, in state of Rio Grande do Sul, on R. Vaccacahy-mirim; lat. 29° 40′ S.; pop. 12,000 (U.) and 40,000 (D.). Communicates by Uruguayana Railway with Porto Alegre (300 k.), and with Uruguayana, Bagé, Rio Grande. The district produces wine, rice, mandioca, timber, and coal; and the central position and railway facilities have fostered the manufactures of the town, which include sugar and flour factories, distilleries, and fruit and meat-preserving. The workshops of the Belgian Railway Co. are established here. The town possesses fine buildings, parks, and all the amenities of a progressive community. Hotel: *Hambourg.*

SANTA THEREZA, in state of Espirito Santo; lat. 19° 57′ S.; pop. 16,000 (D.). Produces coffee, cocoa, tobacco, cereals, sugar, and wine.

SANTOS, in state of S. Paulo, seaport in lat. 24° S.; pop. 75,000 (U.). Communicates by the S. Paulo Railway with S. Paulo (80 k.). Progressive city, with electric trams and lighting, and many modern buildings. The largest coffee port in the world. The climate is hot, but its former unhealthiness has been remedied by improved sanitary conditions. British and American Consuls resident. (For harbour and trade, *see under* "Ports and Harbours.") Hotels: *Grande, Washington,* and *Internacional.*

SÃO BENTO, in state of S. Catharina; lat. 26° 13′ S.; pop. 11,000 (D.). Communicates by S. Francisco Railway with S. Francisco and Rio Negro. Centre of agricultural district, producing cereals, and fruit.

SÃO CARLOS DE PINHAL, in state of S. Paulo, on R. Mongolinho; lat. 22° 8′ S.; pop. 15,000 (U.), and 57,000 (D.). Communicates by a branch of the Paulista Railway with

Rio Claro (77 k.), S. Paulo, and Santos. A progressive town, with fine buildings and public park; centre of a district producing coffee and sugar. Hotel: *Tassoni.*

SÃO FIDELIS, in state of Rio de Janeiro, on R. Parahyba; lat. 21° 40′ S.; pop. 4,000 (U.) and 33,000 (D.). Communicates by Leopoldina Railway with Nictheroy. The district produces mica, timber, cattle, and sugar. Hotel: *Brandão.*

SÃO FRANCISCO, in state of S. Catharina, port on the fertile island of S. Francisco; lat. 26° 10′ S.; pop. 16,000 (D.). Products: rice, maté, aguardiente, mandioca flour, and beans.

SÃO FRANCISCO D'ASSIS, in state of Rio Grande do Sul, on R. Inhacunda; lat. 29° 30′ S.; pop. 12,000 (D.). Produces coffee, sugar, tobacco, cereals, and alfalfa.

SÃO GABRIEL, in state of Rio Grande do Sul, on R. Vacacohy; lat. 30° 21′ S.; pop. 8,000 (U.) and 23,000 (D.). Communicates by Uruguayana Railway with Porto Alegre (452 k.) and Bagé (129 k.). The district is pastoral, breeding and exporting cattle.

SÃO JOÃO D'EL REI, in state of Minas Geraes, on Rio das Mortes; lat. 21° 13′ S.; 2,800 ft. above sea-level; pop. 15,000 (U.) and 75,000 (D.). Communicates by W. Minas Railway with Rio (463 k.). Fine city, with hospital, agricultural college, electric power, and many industries, including cotton textiles and tanning. Coffee, sugar, tobacco, cereals, and cattle are produced in the district. British Vice-Consul in residence. Hotel: *Oeste de Minas.*

SÃO JOÃO DE BARRA, in state of Rio de Janeiro, at mouth of R. Parahyba; lat. 21° 36′ S.; pop. 6,000 (U.) and 21,000 (D.). Communicates by Leopoldina Railway with Campos, and so with Rio and the other cities of the state. The port has been spoilt by the bar at the river mouth. Products: sugar, rice, maize, and mandioca.

SÃO JOÃO DE MONTE NEGRO, in state of Rio Grande do Sul, on R. Cahy; lat. 29° 36′ S.; 85 m. from Porto Alegre; pop. 3,000 (U.) and 34,000 (D.). The district is agricultural,

inhabited largely by European colonists, and exports farm produce of all kinds, together with wine and alcohol.

SÃO JOÃO MARCOS, in state of Rio de Janeiro ; lat. 22° 47′ S. ; pop. 4,000 (U.) and 14,000 (D.). Products : coffee, rice, sugar, mandioca, tobacco, and cheese.

SÃO JOAQUIM DA COSTA DA SERRA, in state of S. Catharina, lat. 28° 6′ S. ; pop. 14,000 (D.). A fertile district, producing cereals and fruits, but suffering from want of communication with profitable markets.

SÃO JOSÉ, in state of S. Catharina, opposite Florianopolis, at mouth of R. Marahy ; lat. 27° 36′ S. ; pop. 23,000 (D.). Exports sugar, rice, maize, tobacco, and cured fish.

SÃO JOSÉ DA BOA VISTA, in state of Paraná, on R. José ; lat. 24° 2′ S. ; pop. 14,000 (D.). Exports agricultural produce.

SÃO JOSÉ DE RIO PARDO. *See* Rio Pardo.

SÃO JOSÉ DOS PINHAES, in state of Paraná, on R. Iguassu ; lat. 25° 34′ S. ; pop. 30,000 (D.). Only 11 m. from Curitybá. Produces cereals and timber; gold, iron, and platinum are found in the neighbourhood.

SÃO LEOPOLDO, in state of Rio Grande do Sul, on R. S. Maria ; lat. 29° 30′ S. ; pop. 7,500 (U.) and 35,000 (D.). Communicates by railway with Porto Alegre (33 k.). Exports the usual agricultural products in large quantities ; jasper and chalcedony are found in the neighbourhood, and also coal. Hotel : *Kock.*

SÃO LOURENÇO, in state of Rio Grande do Sul, at mouth of R. Lourenço, on the Lagoa dos Patos ; lat. 31° 28′ S. ; pop. 3,000 (U.) and 30,000 (D.). The nearest railway station is Boqueirão. Centre of a large pastoral and agricultural colony, producing maté, timber, and the usual crops of the state.

SÃO MANOEL DO PARAISO, in state of S. Paulo, on R. Paraiso ; lat. 22° 40′ S. ; pop. 30,000 (D.). Communicates by the Sorocabana Railway with S. Paulo and Santos. Products : coffee and tobacco.

SÃO MATHEUS, in state of Espirito Santo, on R. São Matheus ; lat. 18° 44′ S. ; pop. 12,000 (D.). Timber, gold, and precious stones exist in the district, and coffee, sugar, cocoa, maize, and rice are grown.

SÃO PAULO, cap. of the state of S. Paulo, on R. Tieté ; lat. 23° 34′ (on the Tropic of Capricorn) ; pop. 400,000. S. Paulo ranks as the second city in the Republic. It communicates by the Central Railway with Rio, by the S. Paulo Railway with Santos (80 k.) its port, and by various lines with the interior of the state, and with the other states of Brazil. The S. Paulo-Rio Grande Railway connects it with Montevideo (56 hours). The city, standing over 2,300 ft. above sea-level, has a healthy climate, and is well provided with water, sewerage and electric power. Its growth since 1890, when the population was but 90,000, has been exceptionally rapid. The numerous fine buildings include Palace of Government, public library, opera house, and the new cathedral is in process of erection ; the great avenidas and the fashionable suburb of Hygienopolis contain many palatial houses. The industries include cotton textiles, brewing, the manufacture of coffee bags, meat-preserving, boots and shoes, hats. There are British and American Consuls in residence, and several foreign banks. Rents and the cost of living generally are very high. Among the hotels are the *Albion, Allemão, Grande,* and *Sportsman.*

SÃO PEDRO DE ITABEPUANA, in state of Espirito Santo ; lat. 21° 7′ S. ; pop. 4,000 (D.). Products : coffee, sugar, tobacco, cocoa, and cereals.

SÃO SEBASTIÃO, in state of S. Paulo, port on the Toque Canal ; lat. 23° 53′ S. ; pop. 10,000 (D.). Sends coffee, sugar, cotton, and tobacco to Santos.

SÃO SEBASTIÃO DE CAHY, in state of Rio Grande do Sul ; lat. 29° 35′ S. ; 63 k. from Porto Alegre ; pop. 3,000 (D.). Products : cereals, mandioca flour, dried meat, and lard.

SÃO SEPE, in state of Rio Grande do Sul, on R. São Sepe ; lat. 30° 14′ S. ; pop. 10,000 (D.). The district is fertile and rich in coal, iron, copper, antimony, and gold. At present it

is without a railway, and is likely to develop rapidly when better communication is given. The town is electric lighted, and has municipal theatre. Chief products: maize, rice, sugar, potatoes; cattle; metals.

SERRO AZUL, in state of Paraná, on R. Assunguy; lat. 24° 50′ S.; pop. 15,000 (D.). Produces sugar, cereals, and fruit.

SETE LAGOAS, in state of Minas Geraes, on R. dos Velhas; lat. 19° 31′ S.; pop. 4,000 (U.) and 40,000 (D.). Communicates by Central Railway with Rio (684 k.) and with Bello Horizonte (90 k.). Coffee and sugar are grown, and manganese, copper, iron, and gold are produced. Hotel: *Drummond.*

SOROCABÁ, in state of S. Paulo, on R. Sorocabá; lat. 23° 39′ S.; pop. 23,000 (D.). Communicates by Sorocabana Railway with S. Paulo (111 k.) and Santos. Cotton textiles and other manufactures are established; timber, sugar, cereals, and gold are produced in the district. Great cattle fairs are held annually.

T

TAQUARY, in state of Rio Grande do Sul, on R. Taquary; lat. 29° 49′ S.; pop. 2,000 (U.) and 22,000 (D.). Communicates by steamboat service on the Jacuhy and Tacuhy with Porto Alegre. Manufactures of lard, sugar, bacon, and maté; sugar, tobacco, cereals, and other agricultural products are grown in the district.

TAUBATÉ, in state of S. Paulo; lat. 23° 2′ S.; pop. 18,000 (U.) and 50,000 (D.). Communicates by Central Railway with S. Paulo (154 k.) and with Rio. Abundant coal and mineral oil deposits in neighbourhood; chief product coffee; about 16,000,000 lb. are produced annually. Cotton and sugar are also grown. Hotel: *Pereira.*

THEREZOPOLIS, in state of Rio de Janeiro; lat. 22° 27′ S.; pop. 5,000 (D.). Communicates by the Leopoldina Railway with Magé, and thence by boat with Rio. Products: wine and fruit.

TIBAGY, in state of Paraná, on R. Tibagy ; lat. 24° 42′ S. ; 2,375 ft. above sea-level ; pop. 30,000 (D.). Timber, maté, and cereals are grown, and diamonds, iron, coal, and gold are found in the district.

TIETÉ, in state of S. Paulo, on R. Tieté ; lat. 23° 5′ S. ; pop. 24,000 (D.). Old town, deriving electric power from falls in the neighbourhood. Large forests. Coffee, sugar, cotton, wines, and cattle are produced in the district.

TRES CORAÇÕES DO RIO VERDE, in state of Minas Geraes, on R. Verde ; lat. 21° 42′ S. ; pop. 1,800 (U.) and 10,000 (D.). Communicates by Rio-Minas Railway with Rio. Produce : coffee, sugar, cereals, and cattle.

TRIUMPHO, in state of Paraná, on R. Iguassu ; lat. 25° 41′ S. ; pop. 13,000 (D.). Produces maté, maize, mandioca, and cereals.

TUBARÃO, in state of S. Catharina, on R. Tubarão ; lat. 28° 34′ S. ; pop. 4,000 (U.) and 37,000 (D.). Communicates by the Thereza-Christina Railway with Laguna and Minas. Products : maize, beans, mandioca, lard, and bacon. Thermal springs exist in the neighbourhood. Hotel : *Cometa.*

U

UBERABA, in state of Minas Geraes, on R. do Prato ; lat. 19° 45′ S. ; 3,150 ft. above sea-level ; pop. 9,000 (U.) and 33,000 (D.). Communicates by Mogyana Railway with S. Paulo. Centre of a pastoral and agricultural country. Cattle, pigs, and cereals are produced. Diamonds are also found. Hotel : *Cervalho.*

URUGUAYANA, in state of Rio Grande do Sul, on R. Uruguay ; lat. 29° 43′ S. ; pop. 12,000 (U.) and 26,000 (D.) Communicates by Uruguayana Railway with Porto Alegre (778 k.), with Rio Grande, and the other towns of the State. Progressive modern city, with electric lighting and tramways, theatre, etc. Many industries, including jerked beef, soap, candles, hats, and furniture. Large pastoral neighbourhood. Extensive trade with Uruguay and Argentina, and large force of Customs officers. Agates are found in the district. Hotels : *Alliança* and *Progresso.*

URUSSANGA, in state of S. Catharina, on R. Urussanga; lat. 28° 39′ S.; pop. 11,000 (D.). Communication by road and wagon at present, but will soon be on a branch of the Thereza-Christina Railway. Chief products: wine and grapes. Maize, sugar, potatoes, mandioca, etc., are also grown.

V

VALENÇA, in state of Rio de Janeiro; lat. 22° 14′ S.; pop. 4,000 (U.) and 25,000 (D.). Communication by Central Railway with Rio (157 k.). Products: coffee, sugar, tobacco, cereals; cattle. Hotel: *Central.*

VASSOURAS, in state of Rio de Janeiro, near R. Parahyba; lat. 22° 26′ S.; pop. 12,000 (U.) and 43,000 (D.). Communicates by Central Railway with Rio. Coffee, sugar, tobacco, and cereals are grown; matches are manufactured in the town.

VICTORIA, cap. of and chief seaport of the state of Espirito Santo; lat. 20° 19′ S.; pop. 20,000. Communicates by the Victoria-Natividade Railway with Diamentina in Minas, and by the Leopoldina Railway with Rio. A growing town, with some good modern buildings (*e.g.*, the congress hall and the high court), electric lighting and trams, and excellent water supply and sanitation. The industries include sugar-refining, distilling, cotton weaving, and boot and shoe making. British and American Consuls are in residence. (For the port and trade, *see under* "Ports and Harbours.") Hotels: *Boulogne and Europe* and *Internacional.*

VILLA NOVA DE LIMA, in state of Minas Geraes; lat. 20° 8′ S.; pop. 20,500 (D.). The nearest station is Bicacho, on the Central Railway. There is a British Vice-Consul here. Centre of a district rich in gold, silver, and iron, including the Morro Velho mine.

VILLA VELHA, in the state of Espirito Santo; lat. 20° 24′ S.; also known as Espirito Santo, at the entrance to the harbour of Victoria.

X

XIRIRICA, in state of S. Paulo, on R. Iguape; lat. 24° 28′ S.; pop. 15,000 (D.). Products: rice, sugar, coffee, tobacco, maize, and cocoa.

Y

YPORANGA, in state of Paraná; lat. 24° 59′ S.; pop. 18,000 (D.). Chief products: maté, timber, and coal.

GENERAL TABLE OF SOUTH AMERICAN CURRENCIES

	Standard.	Unit.	English & U.S.A. Par Value.	Usual Unit of Commerce.	English & U.S.A. Value.	Remarks.
ARGENTINA	Gold	Peso nacional or peso, or (gold dollar) = 100 centavos	47·619d. (practic. = 48d. ·965 $ (96·5 cents.)	Peso papier (paper dollar)	20·97d. (practic. = 21d.) 42 cents	£1 = 5·04 gold pesos (the gold peso is used for official purposes only) £1 = 11·45 paper pesos. $1 m/n ("moneda nacional") = one *paper* dollar.
BOLIVIA	Gold	Peso or (gold dollar)	48d. ·973 $	Boliviano (= 10 reales fuertos or 100 centavos)	19·2d. 38·9 cents	£1 = 12·5 bolivianos N.B.—Accounts are often reckoned in the old dollar of 8 reales or 80 centavos, instead of the true dollar of 100 centavos.
BRAZIL	Gold	Milreis gold	26·934d. (practic. = 27d.) ·546 $	Milreis paper	16d. 32·4 cents	£1 = 8·97 milr. gold, or 15 milr. paper.
BRITISH GUIANA	Gold	Sovereign	240d. 4·866½ $	Dollar (= 100 cents)	50d.	English coins, including fourpenny pieces, current; but accounts are kept in dollars and cents.
CHILE	Gold	Peso or (gold dollar)	18d. ·365 $	Peso papier	About 11d. *c.* 22 cents	£1 = 13⅓ pesos gold. The paper peso fluctuates considerably. The average in 1910 was 10$\frac{37}{32}$d. (The gold peso is used for official purposes only.)
COLOMBIA	Gold	Peso or Colombiano	48d. 1·00 $	Peso papier	·48d. (under ½d.) *c.* 1 cent	£1 = 5 dollars gold or 500 dollars paper. United States' currency is largely used. In Cucuta and on the R. Atrato silver principally circulates.
DUTCH GUIANA	Gold	10-florin piece	200d.	Gulden or florin (= 100 cents)	20d.	£1 = 12 gulden.
ECUADOR	Gold	Sucré	24d. ·487 $	Sucré	24d. 48·7 cents	£1 = 1 condor or 10 sucrés. No paper money.
FRENCH GUIANA	Gold and Silver	20-franc piece 5-franc piece	192d. 48d.	Franc (= 100 centimes)	9·6d.	£1 = 25 francs.
PANAMA	Gold	Balboa	49·5d. 1·00 $	Silver peso	27·75d. 54·50 cents.	£1 = 4·84 balboas or 9·68 pesos. No paper money. United States' currency is largely used.
PARAGUAY	Gold	Peso or (gold dollar)	47·619d. (practic. = 48d.) ·972 $	Peso papier	3·473d. (average in 1910) *c.* 7 cents (1910)	The paper dollar fluctuates; average for 1910 was £1 = 69·10 pesos. Quotations are often made in gold dollars, at the rate of £1 = 5 pesos. (The gold peso is used for official purposes only.)
PERU	Gold	Sol (= 100 centesimos)	24d. ·4866½ $	Sol	24d. 48 cents	£1 = 10 soles. No paper money.
URUGUAY	Gold	Peso nacional (= 100 centesimos)	51d. to 53d. 1·034 $	Peso	51d. to 53d. 1·034 $	The peso fluctuates. £1 = about 4·70 dol. No paper money.
VENEZUELA	Gold	Venezolano or Peso fuerte (= 5 bolivares, or 100 centavos	47·57d. (practic. = 48d.) ·965 $	Bolivar	9·2d. 19·3 cents	£1 = 26 bolivares. (The bolivar approximately = 1 franc.) N.B.—Accounts are frequently reckoned in *pesos sencillos* or *macuquinos* of four, instead of five, bolivares (*i.e.*, 80, not 100, centavos); and in centavos of four, instead of five, centimos.
FALKLAND ISLANDS	(British currency)					

For further details on the currency of the country see special table.

APPENDIX A

MONEY, WEIGHTS AND MEASURES

THE standard is gold, the unit being the (gold) milreis (= 1,000 reis, expressed 1$000), of which the par value is 26·934d., practically 27d. The early currency of Brazil was regulated by the Portuguese law of 1688. The par value of the milreis was fixed in 1833 at 43·5d., but reduced to its present rate of 27d. in 1849. During the nineteenth century great depreciation of the currency with occasional violent fluctuations of exchange occurred. Gold and silver were gradually withdrawn to Europe and replaced first by immense quantities of debased copper, and later by large issues of paper; the note issues were in excess of requirements and no adequate reserve of gold was maintained for their conversion. In 1898 exchange touched its lowest point (5¾d.), equivalent to a depreciation of 78·9 per cent., and stringent and successful measures of reform were undertaken. In 1906 a Conversion Office was established, where the former "inconvertible" paper is exchanged for gold; as it is redeemed it is burnt, and replaced by notes payable in gold. The rate of exchange for this purpose was fixed at 15d., and raised on 31st Dec., 1910, to 16d. The creation of two new coins is now in contemplation, one of gold, value £1, the other of silver, value 9·6d., so that 25 of the silver pieces are equal to one gold piece. The par value of the gold milreis would thus be reduced to 16d.; in other words, the milreis gold and the milreis paper would henceforth be of the same value.

The coins in use are—

Gold (·917 fine)	20 milreis	=	£2	4	10·6
	10 ,,	=	1	2	5·3
	5 ,,	=		11	2·6
Silver (·900 fine)	2 ,,	=			32d.
	1 ,,	=			16d.
	½ ,,	=			8d.

Nickel—400, 200, and 100 reis = 6·4d., 3·2d., and 1·6d. respectively.

Bronze—40 and 20 reis = ·64d. and ·32d. respectively (*i.e.*, rather over ½d. and ¼d.).

£1 = almost 15 milreis (15$000).

A " conto " of reis = 1,000 milreis (1,000 $000) = £67 3s. 9d. It is represented by two dots (:), *e.g.*, Rs. 10,500 : 500$500 = 10,500 contos, 500 milreis, and 500 reis.

Legal tender—

Bronze	up to	200 reis	(= 3·2d.)
Nickel	,,	1 milreis	(= 16d.)
Silver	,,	29 milreis	(= £1 19s. 6d.)

The metric system, adopted in 1862, was made compulsory in 1872, and is in use in all government offices. The ancient Portuguese measures, however, still obtain in certain districts and trades. The following may be instanced—

Vara = 1·1110 metres = 1·2150 yds.
Libra = 0·4595 kilos = 1·012 lbs. avoird.
Arroba = 14·6896 kilos = 32·3847 avoird.
Quintal = 4 arrobas 58·785 kilos = 129·54 avoird., or 1·1169 cwt.
Alqueire (5,000 sq. braças) = (sq. measure of land) at S. Paulo = 174·24 acres.
Ditto (= 10,000 sq. braças) at Rio = 348·48 acres.
Alqueire (dry measure) at Bahia = 36·27 litres = 0·9974 pint.
Ditto at Rio = 39·9970 litres = 1·1004 pints.
Sacca (sack) may be of 2 or of 3 alqueires, *i.e.*, 73 or 109 kilos.
Sacca of sugar usually = 50 kilos.
,, ,, ,, (Pernambuco) = 60 kilos (for Rio, Santos, Paraná).
,, ,, ,, ,, = 75 kilos (for other ports and for export).
,, of cotton = 80 kilos.

1	barrica (barrel) of sugar	=	105	kilos.
½	,, ,, ,,	=	88	,,
¼	,, ,, ,,	=	58	,,
⅛	,, ,, ,,	=	38	,,
⅓	,, ,, ,, (refined)	=	52	,,
1	barrel or sack of flour	=	88·95	kilos.
	,, of cement	=	50	,,
1	sack of cotton	=	80	,,
1	bale ,,	=	180	,,
At Pará, an	Arroba of tobacco	=	15	kilos.
	Alqueire of grain	=	,,	,,
	Frasqueira of rum	=	25	,, or litres.
	Cofo of fish	=	30	,,
	Lata (tin) of oil	=	15	,,

APPENDIX B

POSTAL AND TELEGRAPH GUIDE

I. Post Office

(*a*) The postal service in Brazil, under control of the Ministry of Communications and Public Works, is subdivided into twenty-one postal administrations in four classes (one for the Federal District and one for each State), with three sub-administrations (for the districts of Diamantina, Uberaba, and Campanha in Minas Geraes). There are about 3,500 officers, and a staff of 9,000.

The charges are as follows—

Letters—	reis.
Urban	100 per 15 gr. ($\frac{1}{2}$ oz.) or fraction thereof
Inland (*i.e.*, inter-state)	200 ,, ,, ,, ,, ,, ,, ,,
Foreign	200 ,, 30 ,, ,, ,, ,, ,,
Letter-cards—	Reis.
Inland	200
Foreign	300
Single Postcards—	
Inland	50
Foreign	100
Double Postcards—	
Inland	100
Foreign	200
Manuscripts—	Reis.
Inland	100 per 50 gr.
Foreign	200 ,, 50 ,,
Newspapers printed in Brazil—	
Inland	10 per 100 gr.
Foreign	50 ,, 50 ,,
Printed Matters—	
Inland	20 per 50 gr.
Foreign	50 ,, 50 ,,
Samples—	
Inland	120 per 50 gr. 160 ,, 100 ,, 320 ,, 200 ,, 400 ,, 250 ,, 500 ,, 350 ,,
Foreign .. .. From	200 ,, 50 ,,

Parcels—	Reis.
Inland registration fees	200
Foreign ,, ,, ...	400
Advice of Reception, Inland	100

International Post Office Orders have been issued since 1901. The charges are—

Stamps, etc.—

10 reis	200 reis	700 reis
20 ,,	300 ,,	1 milreis
50 ,,	400 ,,	5 ,,
100 ,,	500 ,,	

Stamped letter cards and postcards are issued, and stamped envelopes for 200, 300, 400, and 700 reis.

Money Orders—

(*a*) Inland—Up to 25 milreis	300 reis		
,, 50 ,, ...	600 ,,		
,, 100 ,, ...	1,000 ,,		
,, 150 ,, ...	1,500 ,,		
,, 200 ,, ...	2,000 ,,		
For each additional 200 milreis or fraction thereof	500 ,,		
(*b*) Foreign—Up to 25 milreis	400 reis	(6d.)	
,, 50 ,, ...	700 ,,	(10½d.)	
,, 100 ,, ...	1$200 ,,	(1s. 6d.)	
,, 150 ,, ...	1$750 ,,	(2s. 2¼d.)	
,, 200 ,, ...	2$250 ,,	(2s. 9¾d.)	
For each 200 milreis over 100$000	500 ,,	(7½d.)	

(*b*) *From England to Brazil.*

Letters (up to 2 x 1 x 1 ft.), 2½d. for the first oz.; 1½d. for each oz. afterwards.

Postcards—Single, 1d.; reply, 2d.

Printed Matter (newspapers, books, catalogues, photographs, engravings, music, etc.) up to 1½ x 1 x 1 ft. and 4 lbs., ½d. per 2 oz.

Commercial and legal papers, etc. (including MSS., invoices, typewritten matter, etc., partly written), up to 1½ x 1 x 1 ft., and 4 lbs., ½d. per 2 oz.; *minimum charge*, 2½d.

Samples, Patterns, Scientific Specimens, up to 12 x 8 x 4 in., and 12 oz., ½d. per 2 oz.; *minimum charge*, 1d.

Parcels—Up to 3 lbs., 3s. 6d.
,, 6½ lbs., 4s.

Maximum length usually = 2 ft., and length + girth 4 ft., but for umbrellas, etc., a greater length is allowed. A Customs declaration, obtainable at Post Offices, must be filled up and signed. Certain articles (*e.g.*, letters, explosives, spirits) are prohibited. Customs' duties are usually collected on delivery, but may be prepaid. Time of transit about 4 weeks.

Money Orders—

Not exceeding £1	3d.
,, ,, 2	6d.
,, ,, 4	9d.
For each additional £2	3d. (up to £10 or £40)

Mails leave Rio de Janeiro weekly, on alternate Wednesdays by R.M.S.P. Co., and by other steamers according to arrival. They leave Southampton and Liverpool alternate weeks, on Fridays and Thursdays respectively; and *viâ* Bordeaux on the same days as Liverpool. Passage 13–18 days.

They leave New York by Lamport & Holt Line or Brazilian Lloyd, four times a month.

II. Telegraphs

(i) *Home*

The telegraphs in Brazil are of five classes—

(1) The national service, or "General Administration of the Telegraphs," which like the Post Office, belongs to the Ministry of Communications and Public Works. It controls upwards of 32,000 kilometres of lines and nearly 700 officers.

(2) The railway telegraphs, with about 20,000 kil. of lines and 1,500 offices.

(3) The submarine cables of the Western Telegraph Co., about 18,000 kil. of lines, and nine offices.

(4) The subfluvial cables of the Amazon Telegraph Co., about 3,000 kil. of lines and 17 offices.

(5) The Rio Grande do Sul system, about 1,600 kil. of lines and 30 offices.

Not all the railway offices, however, work in connection with the General Administration.

There is a fixed tax of 600 reis for telegram, with additional charges which vary in different states. In the Federal capital 20 words may be sent for 500 reis; in the states the rate varies from 100 to 300 reis per word.

There is an abatement of 75% for press telegrams.

(ii) *Foreign*

The rates of telegrams from Rio de Janeiro to places abroad are given in francs and centimes (the franc = 600 reis paper).

	fr. c.	
Uruguay	1.25	per word
Argentina	1.75	,,
Paraguay	2.05	,,
Chile	2.55	,,
England	3.25	,,
France, Germany, Holland, and Belgium	3.63	,,
Peru	3.80	,,
Russia	3.95	,,
Texas and Louisiana ..	4.25	,,
Rest of U.S.A. and Canada	4.45	,,
Ecuador	4.55	,,
Cuba	4.60	,,
Colombia	5.55	,,
Cape Town	5.75	,,

(iii) *From England to Brazil*

Pernambuco Town, 1s. 7d. per word.
Amazon Co. Offices, 1st zone, 3s. 10d.[1]; 2nd zone, 5s.[2]
Other parts of Brazil, 2s. 6d.[2]

(iv) *Wireless Telegraphy*

There are six Marconi wireless stations in the State of Rio de Janeiro, and others at Olinda, Bahia, Santos, S. Catharina, Rio Grande do Sul, and the island of Fernando Noronha (the latter with a range of 1,000 miles). In the Amazon district there are stations at Pará, Santarem, Manáos, Porto Velho, Rio Branco, Senna Madureira, and S. Antonio, and one in the Acre Territory.

The rates are as follows—

For coast telegrams :	60 centimes	per word	(minimum 6 francs)
To a German or Dutch ship :	1s. 4d.	,,	(,, 3s. 4d.)
,, Spanish ship :	3d.	,,	(,, 2s. 6d.)
,, British or other ship :	4d.	,,	(No minimum)

III. Telephones

The telephonic service is (*a*) Federal, (*b*) private. The Federal Government has lines in Rio, and also communicating with Petropolis, Nictheroy, and Therezopolis. There are 25 private company lines in Rio Grande do Sul, 14 in S. Paulo, 10 in Rio, and others in Piauhy (3), Bahia, Minas Geraes, Maranhão (2 each), and Ceará, Pernambuco, Alagôas, Espirito Santo, Paraná, and the Federal District (1 each).

[1] *Vid* Brazilian Land Lines, 4d. less.
[2] ,, ,, ,, ,, 3d. less.

APPENDIX C

STEAMSHIP LINES

I. Europe to Brazil

(1) *English Companies*—

By *Royal Mail Steam Packet* and *Pacific Steam Navigation Co.* (combined). Service "A" leaves Southampton on Fridays, usually weekly; service "O" leaves Liverpool on alternate Thursdays; service "D" and the "intermediate" west coast service, which calls at Rio are also fortnightly from Liverpool.

The route by "A" steamers is: Southampton, Cherbourg, Coruña, [1] Vigo, [1] Leixões, Lisbon, [1] Madeira, [1] St. Vincent (C.V.), Pernambuco, Bahia, Rio de Janeiro, Santos, Monte Video, Buenos Aires.

The route by "O" steamers is: Liverpool, La Rochelle-Palice, Coruña, Vigo, Leixões, Lisbon, Las Palmas, St. Vincent (C.V.), [2] Pernambuco, [2] Bahia, Rio de Janeiro, [3] Santos; then by Monte Video to Magellan Straits and West Coast.

The route by "D" steamers is: Liverpool, Coruña, Villagarcia, Vigo, Leixões, Lisbon, Rio de Janeiro, Santos (outwards only), and Buenos Aires.

The route by the intermediate services from Liverpool varies, as may be arranged.

The fares to Rio by "A" and "O" steamers are: 1st class, £33; 2nd, £22; and 3rd, £8 (single). By "D" steamers, 1st class, £25; and by intermediate service, £18. The average passage is 17 days from Southampton, and 19 or 20 from Liverpool.

The *Lamport & Holt Line* take a limited number of 1st class passengers: (*a*) from Liverpool, (*b*) from Antwerp and London, generally calling at Rio, Bahia, and Santos; but the ports of call vary, and sometimes Rio Grande do Sul is visited. Route *via* New York and Barbadoes, 17 days.

[1] Not called at by every steamer.
[2] Monthly outwards and homewards.
[3] Monthly outwards and fortnightly homewards.

The *Booth Line* runs a fortnightly service to the Amazon ; the route is Liverpool, Plymouth, Cherbourg, Havre, Vigo, Leixões (Oporto), Lisbon, Madeira, Pará, Manáos. The passage averages 17 days to Pará, and 24 days to Manáos. Also monthly from Liverpool to Maranhão, Ceará, and Parnahyba.

The New Zealand and *Shaw Savill* steamers ply monthly on homeward voyage from Rio and Monte Video and Teneriffe, to London and Plymouth.

The *Nelson Line* runs weekly from London to Rio de Janeiro.

The Houlder and McIvor Companies also run to Brazil.

(2) *French Companies*—

The *Compagnie Sud Atlantique* (*Messageries Maritimes*), from Bordeaux to Lisbon, Dakar, Pernambuco, Bahia, Rio de Janeiro, Santos, Monte Video, and Buenos Aires.

The *Compagnie des Chargeurs Réunis*, from Havre to Leixões, Lisbon, Pernambuco, Bahia, Rio de Janeiro, and Santos.

The *Société Générale des Transports Maritimes*, from Marseilles to Pernambuco, Bahia, Rio de Janeiro, Santos, Monte Video, and Buenos Aires.

(3) *German Companies*—

The *Hamburg-American* and *Hamburg-South American Lines*, combined, run weekly from Hamburg, Boulogne, Southampton to Lisbon, Brazil and the River Plate.

The *North German Lloyd* run from Bremen, Antwerp, and Boulogne, to Lisbon, Madeira, and Brazil (North, Central, and South).

(4) *Italian Companies*—

Eight lines ply between Genoa and Brazil to the River Plate, viz., *Lloyd Italiano, La Veloce, Navigazione Generale Italiana, Lloyd Sabaudo, Lloyd del Pacifico* (also to Valparaiso), *Ligure Brasiliana, Società di Navigazione à Vapore*, and *Italia*.

(5) *Other nations*—

Lines run from other European companies include the *Austrian Lloyd* from Trieste ; the *Holland Lloyd* from Amsterdam and Dover ; *Dykman's Line* from Antwerp ; the *Rederie Aktiebolaget* from Malmo, Stockholm, Gothenburg, calling at

Newcastle and Hull; the Portuguese *Sociedad Anónima de Navegación Transatlantica* (ports between Vigo and Barcelona to Rio); the Spanish *Compañía Transatlantica de Barcelona;* and a Russian service from Odessa.

II. The United States

The United States are connected with Brazil by the *Prince Line* (New York and New Orleans); by the *Booth Line* (*vid* Barbadoes) —Fares: New York to Pará, $80; to Manáos, $100—and by the *New Brazilian Lloyd* (River Plate, Brazil, and United States).

III. Coast Services

The coasting trade, reserved by law for Brazilian vessels, is mainly in the hands of the *New Brazilian Lloyd*, which has a fleet of seventy-two vessels, and receives a government subsidy of £187,000 per annum. It connects Rio with all parts to the north and south, by express and slow services; for details consult their time-table. Other companies are—

Lage Irmãos, 15 ships; *Esperança Maritima*, 6 ships; *Companhia Pernambucana*, 8 ships; *Companhia Commercio e Navegaçao* (cargo only; 12 ships); *Empreza de Navegação* (Porto Alegre to Buenos Aires); *Navegação do Alto Uruguay; Empreza Joaquim Garcia*, 2 ships (a Santos' company, subsidised by the S. Paulo Government); *Empreza de Navegação Rio de Janeiro* (north from Rio to Bahia and Aracajú), 3 ships; *Companhia São João de Barra e Campos*, 10 ships; *Navegação Bahiana*, 2 small ships; *Maranhense de Navegação a Vapor*, 4 ships (north and south from São Luiz to Maranhão; subsidised by the Union).

IV. River Services

For the smaller rivers, *e.g.*, the Iguapé, Tocantins, São Francisco, the services are mentioned in the chapter on "Inland Communication and Transport" (*q.v.*). The *Amazon* is served: (*a*) for international communication by the *Booth Co.* (see above); and (*b*) for internal communication on its main stream and important tributaries by the *Amazon River Steam Navigation Co.* This company—an offshoot of the Booth Co.—has its headquarters at Pará, and receives an annual subsidy from the Government.

The following are a few typical fares—

	$
Rio de Janeiro–Monte Video (1,180 geogr. miles; 4 days)	150
Pará—Manáos (924 geogr. miles)	130
Pará—Iquitos (2,200 miles)	317
Bahia—Caravelhas	60
Joazeiro—Bom Jardim	56
„ —Pirapóra	125

The distances of some of the more important steamship routes are—

Rio to—	Miles.
Southampton	5,034
New York	4,748
Lisbon	4,214
Genoa	5,040
Trieste	5,838
Bordeaux	4,894
Antwerp	5,244
Bremen	5,507
Hamburg	5,519
Odessa	6,341
Valparaiso	4,241

New Regulations concerning Merchant Shipping and Coastal Navigation

By Decree n° 10524, dated October 23, 1913, new regulations for the merchant marine and coastal navigation of Brazil were approved.

The maritime trade of Brazil with foreign ports is entirely free, and ships of all nations can freely load and discharge foods, and transport passengers and articles of value belonging to the Union or the individual States, provided they conform to the laws and regulations in existence in Brazil, except under the circumstances provided for under Section 13 of the Constitutional Law of Brazil.

Brazilian mercantile shipping is divided into four classes: (1) ocean trade, or voyages between Brazilian and foreign ports, or *vice versa;* (2) long distance coastal trade, or voyages between two or more of the Brazilian States; (3) petty coastal trade, or voyages within the boundaries of a single State; and (4) internal shipping or voyages in or on the ports, rivers, canals, and lakes of Brazil.

Coastal navigation for the transport of merchandise can be carried on only by duly registered Brazilian vessels.

Coastal trading is prohibited to foreign vessels, which are in this sense regarded as smugglers ; they are allowed—

(1) To enter any port freely and to leave again within the stipulated period, or to stop for the purpose of landing shipwrecked or sick people ;

(2) To enter a port and to leave for another Brazilian port after having discharged all or a part of their cargo for local consumption or for re-export ;

(3) To transport from one port of the Republic to another passengers of all classes and origins, with their baggage and any animals that may belong to them, as well as postal parcels weighing not more than five kilogrammes each, agricultural and manufactured products of a perishable nature and metallic coin ;

(4) To take on board in any Brazilian port, or in several of such ports, food-stuffs intended for export to points outside the Republic ;

(5) To carry assistance from any Brazilian port to any other of the Republic, with the permission of the Government, in the case of famine, plague or other public calamity ;

(6) To transport merchandise from one Brazilian port to another in the case of exterior war, interior troubles, strikes and injury caused to the national trade and navigation by a foreign blockade, even in the event of no formal declaration of war having been made, and as soon as the public authorities deem such a course advisable ;

(7) To load or discharge merchandise or articles belonging to the public authorities.

In case of damage, of forced landing of cargo, or of other forms of " force majeure," goods transported by foreign vessels and coming from any port of the Republic, may be discharged or sold in any other port of the Republic, subject to the consent of the interested parties being obtained and the customs authorities being satisfied as to the necessity for such exceptional action.

* * * *

Navigation on the rivers and internal waters of Brazil continues to be permitted to all nations, conformably with

the laws now in force. Similar navigation is permitted to neighbouring nations according to the special treaties and agreements in existence.

* * * *

No vessel intended for ocean voyages or long distance coastal trade may be built in Brazil without the permission of the Minister of Marine, by whom the plans of the vessel must be approved.

A merchant shipping vessel, in order to be considered as Brazilian and consequently able to carry on coasting trade, must fulfil the following conditions—

(1) It must have been built in Brazil ;

(2) It must be the property of a Brazilian citizen or of a company or undertaking, having its registered offices in Brazil, under the sole management of a Brazilian citizen ;

(3) It must be commanded by a Brazilian captain or master, and be manned by a crew of whom two-thirds are Brazilians, and carry a Brazilian chief engineer.

Vessels constructed abroad and legally acquired by Brazilians are also considered as Brazilian ships, and so are those captured from an enemy and declared as legal prizes, found abandoned on the high seas, confiscated for breach of Brazilian laws, or acquired by Brazilians in virtue of gifts, sales or judicial proceedings. In all cases vessels must be the property of Brazilian citizens, and must conform to the regulations mentioned above in regard to captain and crew.

* * * *

All Brazilian vessels engaged in coastal trade and carrying passengers, either casually or regularly, and making voyages of more than seventy-two hours between the place of departure and port of destination, must have on board a Brazilian doctor nominated by the Minister of the Interior.

* * * *

Vessels of all kinds intended for river navigation in the valley of the Amazon are exempt from all import duties.

Vessels engaged in river navigation in all other parts of the Republic pay duties at the rate of eight per cent. *ad valorem.*

Vessels employed for port services or for fishing are in all cases considered as Brazilian boats, even when they belong to foreigners.

For the time being—until January 4, 1917—the captains, masters, and one-half of the respective crews of steam or sailing vessels used for fishing may consist of foreigners, on condition that they undertake to submit their eventual legal proceedings to the Federal Courts.

[Extract from the *Diario Official*, n° 252, October 29, 1913.]

APPENDIX D

DIPLOMATIC REPRESENTATIVES

(*a*) Of Brazil to the United States of America

Ambassador in New York—Dr. Domicio da Gama.
1*st Secretary*—J. de Oliveira Murinelly.
2*nd Secretaries*—J. F. de Barros Pimentel, J. J. Moniz de Aragão. Embassy 1013, 16th Street, New York.
Commercial Attaché—Dr. M. da Costa Barradas.
Naval Attaché—Radler de Aquino.
Consul-General in New York—G. Ferreira da Cunha.
Vice-Consul in New York—F. G. P. Leão.
Vice-Consuls are established at Baltimore, Boston, Brunswick, Calais, Charleston, Chicago, Fernandina, Gulfport, Mobile, New Orleans, Norfolk, Pascagoula, Pensacola, Philadelphia, Port Arthur, Richmond, St. Louis, San Francisco, Savannah, Wilmington, etc.

(*b*) Of the United States of America to Brazil

Ambassador in Rio de Janeiro—Edwin V. Morgan.
1*st Secretary*—G. B. Rives.
2*nd Secretary*—F. M. Gunther.
Military Attaché—Le Vert Coleman, Captain.
Consul-General in Rio de Janeiro—J. G. Lay.
Consuls (Bahia)—D. R. Birch ; also at Pará, Pernambuco, Santos.
Consular Agents—Fortaleza, Maceió, Manáos, Maranhão, São Paulo, Rio Grande do Sul, and Victoria.

(*c*) Of Brazil in Great Britain

Envoy and Minister in London—Senhor Eduardo Lisboa.
1*st Secretary*—A. Guerra Duval.
2*nd Secretary*—Adolpho da Silva Gordo.
Military Attaché (vacant).
Naval Attaché—Captain Varella Quadros.
(Offices of Legation : 1 Halkin Street, London, S.W.)
Consul-General in London—F. Alves Vieira, Coventry House, South Place, E.C.

Consul-General in Liverpool—Lully José de Souza.

Consuls are established at Birmingham, Bradford, Bristol, Cowes, Dover, Falmouth, Hull, Leeds, Manchester, Newcastle, Plymouth, Portsmouth, Sheffield and Southampton in England; in Cardiff, Milford Haven, Newport and Swansea in Wales; in Dundee, Edinburgh, Glasgow and Leith in Scotland; and in Belfast, Cork, Dublin and Limerick in Ireland.

(*d*) Of Great Britain in Brazil

Envoy and Minister in Rio de Janeiro—Sir W. H. D. Haggard, K.C.M.G., C.B.

1*st Secretary*—Arnold Robertson.

2*nd Secretary*—H. S. Birch.

Military Attaché—Lieut.-Col. Sir Edward Grogan, Bart.

Naval Attaché—Capt. H. S. Grant, R.N.

Translator—L. A. H. Parish.

Consul-General in Rio de Janeiro—D. R. O'Sullivan-Beare.

Consuls are established in Bahia, Pará, Pernambuco, Porto Alegre, Rio Grande do Sul, and São Paulo; Vice-Consuls in Rio de Janeiro, Cuyabá, Morro-Velho, S. João del Rey, Victoria; Bahia and Aracujú; Pará, Manáos and Maranhão; Pernambuco, Ceará, Maceió, Parahyba, and Rio Grande do Norte; Uruguayana; S. Paulo, Curitybá, Florianopolis, Santos, S. Francisco, Fortaleza and Paranaguá:

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SOUTH AMERICA
ENGLISH MILES
0 200 400 600 800
KILOMETRES
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VENEZUELA
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PERU
BOLIVIA
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PARAGUAY
CHILE
ARGENTINA
CARACAS
Maracaibo
Cartagena
Aspinwall
Panama
Bogota
Medellin
Quito
Guayaquil
Lima
Callao
Cuzco
La Paz
Arequipa
Oruro
Potosi
Sucre
Santa Cruz
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C. HORN
FALKLAND Is (BRIT)
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